THE IRON TRADE REVIEW

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Decreased Demand Results in Lessened Activity

Steel Companies Reducing Pig Iron Production Rapidly—Structural Outlook Favorable in Some Centers—Iron Ore Market Drags

April was an unfavorable month for the iron trade, and diminished demand is now being clearly reflected in decreased activity of blast furnaces and rolling mills. A leading independent interest has in operation only five of his 24 open-hearth furnaces. The United States Steel Corporation's bookings for April were about 25,000 tons daily, compared with 35,000 tons during March. Its April shipments were active, being about equal to the March volume.

Pig Iron Production

The total production of coke and anthracite pig iron for April was 2,045,786 tons, a decrease of 119,978 tons, compared with March. During April, 19 furnaces of steel plant companies and eight merchant stacks were blown out, but six furnaces were blown in, making a net loss of 21. During the last few days of the month, the blowing out by steel companies was rapid. The policy of curtailment of active blast furnace capacity continues with the United States Steel Corporation, which now has 75 furnaces blowing, 42 out of blast, and two banked.

Iron Ore

The largest single cargo of ore ever brought to this country reached Philadelphia the last week, when the steamer Tellus discharged its cargo of 12,400 tons of Wabana, Newfoundland, ore, which shipment starts the ore movement of Wabana ore to eastern blast furnaces. Further efforts of Lake Superior ore shippers failed to interest eastern consumers. Consumers in the central west are also indifferent and in a waiting mood. Lake freight rates on ore have been reduced from 70 cents to 60 cents from the head of the lakes, and it is not certain that this rate can be maintained.

Shapes and Plates

A very large tonnage of structural material is expected to reach the contract stage in several large cities at an early date. The outlook in New York and Chicago is especially favorable. Contracts of the week include 8,385 tons booked at Chicago, including 1,400 tons taken by the American Bridge Co., for the Southwestern Life Insurance Co., Dallas, Tex. Contracts booked in New York include 1,700 tons for the Fabian Construction Co. loft to A. E. Norton & Co., and 1,400 tons for the Haviland building, to the American Bridge Co. More open cutting of prices of plates is reported both east and west of Pittsburg. A Chicago firm has taken 1,000 tons of riveted steel pipe, awarded by the city of Tacoma, for the Green river reservoir.

Pig Iron

The pig iron situation in the Chicago district is not entirely devoid of encouraging features, but in nearly all centers, profound dullness prevails. Recent sales of basic in the east, amounting to about 10,000 tons, have fixed $15, delivered, as the prevailing price. The leading cast iron pipe interest has bought 5,000 tons of lower foundry grades for Buffalo shipment, and has purchased some additional tonnage for shipment to its New Jersey plant. A Canton, O., steel company is in the market for 3,000 tons of basic for third quarter delivery.

Railroad Buying

That railroad buying has not entirely stopped is shown by the orders taken during the week, including 2,850 tons of structural material, placed at Chicago, 14,000 tons of steel rails for the Florida & East Coast, awarded the Maryland Steel Co.; 8,000 tons of rails for the Twin City-Kansas City short line of the Rock Island; 1,600 tons for a B. & O. bridge at Wheeling, taken by the American Bridge Co., and 1,300 tons for bridge work for the Boston & Albany, taken by the New England Structural Co.

Cast Iron Pipe

The leading cast iron pipe company has closed for 1,600 tons for Kansas City and a considerable tonnage of cast iron pipe is pending. The tonnage of steel bars being placed is light, but bar iron is very dull, with continued irregularity in prices. Prices on iron boiler tubes are very irregular. The demand for wire products, which has been rather active, is not so good in some sections.

Exports

The export business continues in about the same volume. The Maryland Steel Co. has taken an order for rails for the National Railways of Mexico, and the leading interest 3,500 tons for the Guatemala Central. The larger volume of Mexican business entered recently indicates some improvement in the political situation in that country. The New Zealand rail order of 10,500 tons, which occasioned some adverse comment abroad on account of the report that it had gone to the United States Steel Corporation, has not come to this country at all, having been taken by the Barrow Hematite Steel Co., of England.

WORLD'S IRON MARKETS

PITTSBURG

Price Shading More General—Decrease in New Business.

Office of THE IRON TRADE REVIEW,
2148-49 Oliver Bldg., May 2.

There was a noticeable falling off in new business and specifications against contracts in practically all branches of the local iron and steel trade in April, as compared with the preceding month. Several companies report that orders for billets and sheet bars passed for entry on mill books in April were about equal to those of January and somewhat under those of February. Steel mills are hungry for business and billets and sheet bars are being offered under the openly quoted prices. While no particularly large awards for the lighter steel products are noted, most mills report that there is a moderate run of miscellaneous business, which in the aggregate makes up fairly heavy tonnage. Consumers are buying cautiously and are covering only for urgent needs. There has been a further slowing down in the markets on tin plate and wire products as far as new business is concerned. The sheet market continues irregular with large tonnage being offered. Demand for steel bars is light and further weakness has developed in the bar iron market.

While prices generally have been well maintained, evidence of shading has appeared during the past week in markets which heretofore have been free from cutting. Odd lots of plates have been sold by mills both east and west of Pittsburg at $1 a ton under the regular market quotation of 1.40c, Pittsburg. The largest inquiry for plates pending at present involves 4,500 tons for riveted pipe work in Los Angeles, Cal. Encouraging developments are noted in the structural steel market, and proposed new construction under active negotiation in the immediate Pittsburg district involves upward of 20,000 tons of steel.

The largest written inquiry for pig iron that has appeared in this market in several weeks involves 3,000 tons of basic for delivery at Canton, O., over the third quarter. A local steel casting company has taken from 300 to 500 tons of basic at a price understood to be slightly under $13.50, valley, but the iron probably will not come from a valley furnace. Three sales of furnace coke for May delivery involve 17,000 tons. The coke market as a whole is quiet and prices are not as firm as a week ago. The scrap market continues weak.

Pig Iron.—Slightly more inquiry for pig iron is noted in this territory, although the market as a whole is quiet. Furnace interests are optimistic and look for heavier inquiry within the next 30 days. Production of pig iron by the non-merchant furnace interests is being curtailed, several furnaces having been blown out during the past 10 days. The largest inquiry pending at present involves 3,000 tons of basic for delivery at Canton, O., over the third quarter. This is the largest written inquiry that has appeared in this market in several weeks. A local steel casting company has purchased between 300 and 500 tons of basic pig iron for immediate shipment and there is strong evidence that the iron was sold slightly under $13.50, valley, although the iron probably will not come from a valley furnace. The general asking price of basic is $13.75, valley. No inquiry for Bessemer iron has appeared and sellers continue to ask $15, valley. The average monthly price of Bessemer pig iron for April was $15, valley, or $15.90, Pittsburg, the same as for the preceding seven months. The average monthly price of basic in April was $13.75, valley, or $14.65, Pittsburg, the same as for March. A local steel car company has taken about 300 tons of malleable at $14, valley, for prompt shipment. Odd lots of No. 2 foundry have been sold on a basis of from $13.75 to $14, valley, and moderately heavy tonnage is under active negotiation. No. 3 blast furnace of the Eliza group of the Jones & Laughlin Steel Co. was rebuilt in 73 days and has been placed in service. No. 1 stack of this group was rebuilt last year in 95 days. So far, the reduction in iron ore prices for the 1911 season has had little effect upon the pig iron situation. In view of the fact that there has not been enough trading thoroughly to test the market, we continue to quote the market as follows:

(Prompt Shipment.

Bessemer, valley	$15.00
Bessemer, Pittsburg	15.90
Basic, valley	13.75
Basic, Pittsburg	14.65
No. 2 foundry, Pittsburg	14.65
Gray forge, Pittsburg	14.15
Malleable, Pittsburg	14.65

(Third Quarter.)

Bessemer, valley	$15.00
Bessemer, Pittsburg	15.90
Basic, valley	13.75
Basic, Pittsburg	14.65
No. 2 foundry, Pittsburg	14.90
Gray forge, Pittsburg	14.15
Malleable, Pittsburg	14.65

Ferro-Alloys.—Most consumers of ferro alloys are covered for their early needs and trading is light. A local interest has taken 100 tons of ferro-manganese at $36.75, Baltimore. Definite action has not yet been taken on the inquiry of an Ohio steel company for 200 tons of ferro-manganese. There has been no important trading in 50 per cent ferro-silicon.

We quote ferro-manganese at $36.50 to $37, Baltimore, for prompt and forward delivery. The freight rate from Baltimore to Pittsburg is $1.95 per ton.

Fifty per cent ferro-silicon is quoted at $53 to $54, Pittsburg, for prompt and forward delivery; 12 per cent, $25; 11 per cent, $24; 10 per cent, $23, f. o. b. Jisco and Ashland furnaces. The freight rate to Pittsburg is $1.90. The foreign grades are held at $1 or more a ton over domestic prices.

Plates.—Several companies in this territory report that shipments of plates in April were only slightly below those of the preceding month. Miscellaneous business in plates continues moderately heavy, although no particularly large awards have been made. Prices are being maintained by all the larger mills, although 1.40c, Pittsburg, has been shaded during the past week by mills both east and west of Pittsburg. The largest inquiry in the market at present involves 4,500 tons of plates for riveted pipe work in connection with the Los Angeles, Cal., aqueduct. No important awards for cars are noted in this market and there is not much inquiry pending. We quote the market as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches, 1.40c. Extras are as follows, per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.20c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches excepting straight taper plates varying not more than 4 inches in width at ends,

narrowest end being not less than 30 inches, 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ½ inch to and including 3-16 inch plate on thin edge, 0.10c; under 3-16 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms net cash in 30 days.

Sheets.—Conditions surrounding this market show very little change from a week ago. New business is very light and specifications against contracts are not very active. All of the larger mills are maintaining prices in effect since early in December, 1910, although the small mills are shading prices on the small amount of business appearing. Stocks in jobbers' hands are not very heavy, but buying from this source is light. Some mills have comparatively little business on their books at present. We quote prices as follows, with $1 a ton added as the delivered price in the Pittsburg district:

Blue annealed sheets, No. 10 gage, 1.60c to 1.65c; box annealed sheets, No. 28 gage, 2.15c to 2.20c; galvanized sheets, No. 28 gage, 3.15c to 3.20c; painted roofing sheets, 1.50c to 1.55c per square for No. 28 gage, 2½-inch corrugation; galvanized roofing sheets, 2.75c per square for No. 28 gage, 2½-inch corrugation.

Tin Plate.—Manufacturers report that they have received heavy specifications against contracts for tin plate for delivery up to July 1, and indications are that mills will continue to operate on a very satisfactory schedule during the next few months. New business is light, as most consumers are covered by contract up to Oct. 1. There is less talk of an advance of 10 cents per base box for delivery over the fourth quarter and considerable business has been taken for this period at today's price. It is estimated that the mills of the leading interest and independents are operating in the neighborhood of 80 per cent of capacity. Shipments of tin plate in April exceeded those of January and February, although not quite so heavy as in March. The base price on tin plate is as follows:

Coke tin plate, 10-pound basis, 14 x 20, $3.70 f. o. b. mill, Pittsburg district.

Rails and Track Material.—Specifications against contracts for standard steel rails in April made a fairly satisfactory showing and mills continue to operate at about the same rate as last week. New demand for standard rails for domestic use is comparatively light. New business and specifications for light rails, although not heavy, make a fairly good showing as compared with corresponding periods since the first of the year. Demand for spikes and track supplies is extremely light and very little business has been placed since April 1, when the price of standard railroad spikes was advanced $1 a ton. Most mills continue to quote $1.60, Pittsburg, as the minimum, although lower quotations are understood to have been made by some makers. We quote the market as follows, the base price on open-hearth rails being 1.34c per pound at the mill:

Fifty-pound and heavier, 1.25c per pound; carloads and less than 500 tons, 1.34c per pound; light rails on base weight of 40 to 45 pounds, $26.50 to $27, the schedule on the other weights being irregular and subject to negotiations; angle splice bars for standard sections, 1.50c, Pittsburg; track bolts, 2.30c, Pittsburg.

RAILROAD SPIKES.

4½, 5 and 5½ x ⅜	$1.60
3, 3½, 4, 4½ and 5 x ½	.10
3½, 4 and 4½ x ⅝	.20
3, 3½, 4 and 4½ x ⅝	.30
2½ x ⅝	.40
2½, 3 and 3½ x ⅝	.60
2 x ⅝	.80

Steel.—The semi-finished steel market is extremely dull and there is considerable irregularity in prices, particularly on open-hearth steel. There has been no important trading during the past week and the falling off in specifications noted a few weeks ago has resulted in mill operations being cut down materially. Some makers are quoting considerably under the openly quoted prices, but there is not enough business appearing to determine what could be done on desirable tonnage. The larger makers of Bessemer billets and sheet bars are not quoting below $23 and $24, respectively, makers' mill, Pittsburg or Youngstown, and no actual sales have been reported below these figures. The outlook for this market is not very bright. Sales of forging steel during the past week have been confined to small lots. We quote the market as follows:

Bessemer 4 x 4 billets with 0.25 carbon and less are quoted at $23, with the usual extras for size and analysis, and open-hearth rolling billets, $22.50 to $23. Bessemer sheet and tin bars are quoted at $24, and open-hearth sheet bars are quoted at $23.50 to $24, makers' mill, Pittsburg or Youngstown, with full freight to destination added. Forging billets are quoted at $28 to $28.50, Pittsburg.

Hoops and Bands.—New demand for hoops and bands continues light and specifications in April were disappointing. Buyers are not anxious to cover for future requirements, although manufacturers look for increased activity within the next month. Prices are firm. We quote the market as follows:

Hoops in carload lots, 1.45c, Pittsburg; in less than carload lots, 1.55c; bands, 1.40c, base, with net extras, as per standard steel.

Merchant Bars.—The total tonnage of steel bars placed during the past 10 days has been light and specifications in April were not as good as in the preceding month. Agricultural interests continue to buy in small lots for early shipment, although little interest is being shown for forward delivery. Mills are quoting today's price, 1.40c, Pittsburg, for delivery up to Oct. 1. Bar iron mills have little business on their books and prices are not very firm. Most mills continue to quote 1.35c, Pittsburg, but this figure is understood to have been shaded. Local mills do not expect any trouble in adjusting the wage scale with the Amalgamated Association of Iron, Steel and Tin Workers for the year beginning July 1. The annual convention of the Amalgamated Association opened at Canton, O., today. Specifications against contracts for shafting have been unsatisfactory and little new business is appearing. We quote the market as follows:

Common iron bars, 1.30c to 1.35c, Pittsburg; Bessemer and open-hearth steel bars, 1.40c; plow and cultivator, 1.40c; channels, angles, zees, tees, under 3-inch, 1.50c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds of a size, 0.35c advance. Cold rolled and ground shafting, 55 per cent in carloads and 50 per cent in less than carloads, delivered in base territory.

Muck Bar.—This market continues extremely quiet, no sales having been reported for some time. We quote the best grades of muck bar nominally at $30, Pittsburg.

Structural.—Developments in this market during the past ten days have been of an encouraging nature and the outlook for the future is brighter than for some time. No large awards have been made, but there is a large amount of proposed new construction under active negotiation and steel mills report that structural steel tonnage entered on mill books in April shows only a slight decline as compared with the preceding month. The American Bridge Co. has taken a contract for 1,600 tons of bridge work for the Piedmont Traction Co. in South Carolina. Work has been started on the approaches for the proposed new bridge across the Allegheny river in the Point district, Pittsburg, and bids for the superstructure will be invited about July 1. Several thousand tons of structural steel will be required. Proposed new construction under active negotiation in the Pittsburg territory involves upward of 20,000 tons of steel. We quote the market as follows:

Beams and channels, 15 inches and under, 1.40c; over 15 inches, 1.50c; zees, 1.40c; tees, 1.45c; angles, from 3 to 6 inches, 1.40c; over

6 inches, 1.50c; universal and sheared plates, 6¼ inches wide and wider, 1.40c.

Merchant Pipe.—There is not a great deal of activity in the local pipe market, although most mills report a fair run of orders for both iron and steel merchant pipe. Inquiries for large line pipe noted recently are still pending and indications are that the order for 53 miles of 8-inch pipe to be used by the Guaranty Oil Co. in California will be awarded shortly. Prices on both iron and steel merchant pipe are reported as being firmly held by the mills, although one manufacturer of iron pipe who has quoted prices somewhat higher than those of other mills, has issued a new card allowing 3 points off for car load lots, as is done by other makers. Some companies have issued a new card on oil country goods, but there has been no change in the list of discounts on this class of steel products and only a few unimportant changes on iron oil country goods. We quote the following official discounts in carload lots, subject to the usual preferential discount to the larger buyers, merchant pipe, where specified, being offered in from ⅛ to 6 inches:

Iron and Steel Pipe Basing Prices.

	Steel.		Iron.	
		Butt weld.		
	Black.	Galv.	Black.	Galv.
⅛, ¼, ⅜ inch.....	72	58	68	54
½ inch	75	60	71	59
¾ to 1¼ inch.....	79	69	75	65
2 to 3 inches	80	70	76	66
		Lap weld.		
2 inches	76	66	72	62
2½ to 4 inches	78	68	74	64
4½ to 6 inches.....	77	67	73	63
7 to 12 inches.....	75	59	71	55
EXTRA STRONG, PLAIN ENDS.				
		Butt weld.		
⅛, ¼, ⅜ inch	69	59	65	55
½ inch	74	68	70	64
¾ to 1¼ inch.....	78	72	74	68
2 to 3 inches.....	79	73	75	69
EXTRA STRONG, PLAIN ENDS.				
		Lap weld.		
2 inches	75	69	71	65
2½ to 4 inches.....	77	71	73	67
4½ to 6 inches.....	76	70	72	66
7 to 8 inches.....	69	59	65	55
9 to 12 inches.....	64	54	60	50
DOUBLE EXTRA STRONG, PLAIN ENDS.				
		Butt weld.		
½ inch	64	58	60	54
¾ to 1¼ inch.....	67	61	63	57
2 to 3 inches.....	69	63	65	59
DOUBLE EXTRA STRONG, PLAIN ENDS.				
		Lap weld.		
2 inches	65	59	61	55
2½ to 4 inches.....	67	61	63	57
4½ to 6 inches.....	66	60	62	56
7 to 8 inches	59	49	55	45

Plugged and reamed pipe is furnished at 2 points higher price, either butt or lap weld.

Boiler Tubes.—New demand for merchant and locomotive boiler tubes is light and specifications have not been as heavy as expected for this season of the year. Prices on steel boiler tubes announced recently are reported as being firm. The market on iron boiler tubes is irregular. We quote the following discounts on steel boiler tubes in carload lots to jobbers:

1¼ to 2¼ inch	65
2½ inch	67½
2¾ to 3¼ inch	70
3½ to 4½ inch	72½
5 and 6 inch	65
7 to 13 inch	62½

To destination east of the Mississippi river will be sold at delivered discount for carloads lowered by 2 points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburg. Usual extras to jobbers and boiler manufacturers.

Wire Products.—The market on wire products, which had been one of the most active branches of the local trade so far this year, has quieted down as far as new business is concerned. Specifications against contracts for wire nails and plain wire, made some time ago at $1 a ton, under today's asking prices continue moderately heavy and some mills are running full time and are one and two weeks behind in shipments. Practically all jobbers and large users of wire nails bought heavily prior to the recent advance and as a result there has been little buying at $1.80, Pittsburg. Reports show that some of the local wire mills had an exceedingly good run all through the month of April. Some of the contracts for plain wire and wire nails, made some time ago at $1 and $2 a ton, under today's market have expired, and in one instance at least these contracts have been extended. Demand for cut nails is not heavy. Western mills continue to ask $1.65, Pittsburg, although this figure is understood to have been shaded on particularly desirable business. Eastern manufacturers of cut nails are quoting $1.70, Pittsburg. We quote the market as follows:

Wire nails, jobbers' carload lots, $1.80; retailers' carload lots, $1.85; cut nails (western makers), jobbers' carload lots, $1.60 to $1.65; cut nails (eastern makers), Ptttsburg base, $1.70; painted barb wire, jobbers' carload lots, $1.80; retailers' carload lots, $1.90, with 30c for galvanizing; plain wire to jobbers in carloads, $1.60, and to dealers, in carloads, $1.65; polished staples, $1.80; galvanized staples, $2.10.

Wire Rods.—Most users of wire rods are covered by contract and buying is limited to odd lots for early shipment. A few mills continue to ask $30, Pittsburg, but no sales have been reported at this figure. We quote $29, Pittsburg, on Bessemer and open-hearth rods.

Coke.—The local coke market has shown slightly more activity in the past week in the way of sales for early delivery, but the market as a whole is quiet and only moderately firm. Several blast furnace interests, which have been buying in the open market from month to month, have closed for their May requirements of coke. One interest has taken 7,500 tons at $1.50, ovens; another company has taken 2,500 tons at $1.65, ovens, and a third interest has taken 7,000 tons at $1.60, ovens. The consumers of foundry coke are beginning to show more interest in their requirements for last half and heavy tonnage is involved in recent sales for this period on a basis of $2.40, ovens. We quote standard Connellsville furnace coke for prompt shipment at from $1.50 to $1.60, ovens, and from $1.80 to $2, ovens, for second half delivery. On high grade Connellsville foundry coke, we quote from $1.95 to $2, ovens, for prompt shipment and from $2.20 to $2.40, ovens, for forward delivery. The Connellsville *Courier's* figures for the week ending April 22, show 26,297 active ovens with an output of 312,942 tons, as compared with 28,427 active ovens and a production of 349,475 tons the previous week.

Old Material.—The local scrap market shows considerable weakness, although prices are not quotably lower. Consumers are not buying, except in small lots for immediate shipment and shipments against contracts previously made are being held up by consumers at Monessen, Steubenville and other points. A Sharon, Pa., interest has taken about 1,000 tons of heavy melting steel at $13, delivered, but it now develops that this sale was made several days ago before the market dropped to the present level of $12.50, delivered. Odd lots of bundled sheet scrap have been sold at from $10.50 to $10.75. Machine shop turnings have not sold below $9, although consumers will not pay more than this figure. It is expected that several of the railroads will issue their usual monthly list of scrap before the end of the present week. We quote, gross tons, delivered in the Pittsburg district, including Monessen, Sharon, Steubenville, Brackenridge and Follansbee, as follows:

Heavy melting scrap	12.50 to 13.00
Rerolling rails	14.00 to 14.25
Bundled sheet scrap	10.50 to 10.75
Iron axles	23.50 to 24.00
Old iron rails	15.50 to 16.00
No. 1 wrought scrap	13.50 to 14.00
Old car wheels	13.00 to 13.50
Low phosphorus	17.00 to 17.25
Machine shop turnings.....	9.00 to 9.25
Cast borings	8.25 to 8.75
No. 1 cast scrap.....	13.50 to 13.75
Malleable	13.00 to 13.50
Stove plate	10.50 to 10.75

Power for the new addition being built to the plant of the Union Steel Casting Co., Pittsburg, will be furnished by Westinghouse gas engines of 200 horsepower each. The company will erect a new power plant 40 x 100 feet, and the capacity of the plant will be increased from 465 horsepower to 1,065 horsepower.

The Chesapeake & Ohio Railway Co. advises that it is not the intention to replace the buildings at Clifton Forge, Va., recently destroyed by fire.

CHICAGO

Railroads Figure in Structural Lettings—Undertone of Optimism.

Office of THE IRON TRADE REVIEW,
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Finished material has been a little more active during the past week. Structural lettings reported in the Chicago market total 8,385 tons, of which it is interesting to note 2,850 tons were ordered by railroads. The largest single structural letting was the Southwestern Life Insurance building, Dallas, Texas, which was taken by the American Bridge Co. Rail orders are fairly heavy, including 8,000 tons of 85-pound standard sections for the new Twin City-Kansas City Short Line of the Rock Island. A pipe contract in Tacoma, Wash., will require 1,100 tons of steel pipe and 2,100 tons of bands. It is probable that the bands will be imported. A number of heavy cast iron pipe contracts are pending and will be closed this week. These involve 7,100 tons. Pig iron conditions show very little change. Old material prices show general declines.

Pig Iron.—There are a few inquiries, but most of them are of such a character that sellers are not interested. One Illinois melter announces that after July 1 he will be in the market for between 1,000 and 2,000 tons of southern iron. Another manufacturer in this state says that while he has plenty of iron on hand at present and is not compelled to purchase, he will consider an offer on 500 to 700 tons of southern iron that will grade No. 2, with the exception of manganese, which should be 1 per cent and over. The buyer thinks $11.50, Birmingham, would interest him for second half delivery. Sales have been few and far between. There is no doubt that a good many foundries are by no means fully covered for their second half requirements and this gives a good foundation for the prediction that a moderate buying movement may be expected within the next sixty days. There is consequently a rather strong undertone of optimism in the market. A leading agricultural maker in Northern Indiana has reported privately that he will be in the market for a large part of his second half requirements in a few weeks. Pig iron production in the Chicago district decreased sharply last month, due to the blowing out of various merchant stacks.

We quote the market, for delivery in Chicago, except Northern iron, which is quoted f. o. b. furnace, as follows:

(Shipment this year.)

Lake Superior charcoal	$17.50
Northern foundry No. 2	15.00
Southern foundry No. 2	15.35
Southern silveries, 5 per cent silicon	16.35
Jackson Co. silveries, 8 per cent	18.90
Malleable Bessemer	15.00
Alabama basic	15.35

Billets.—The Chicago billet market shows absolutely no features of interest and no sales have been made for the past two weeks. We continue to quote open-hearth forging billets $30.60, f. o. b. Chicago, and open-hearth re-rolling billets, $25.60, base, Chicago.

Merchant Bars.—Sales of bar iron as low as 1.18c, Chicago, have been reported but cannot be confirmed. Makers declare that the bar iron market is steadier at present than was the case during most of April and that strong efforts are being made to hold the price at 1.25c. Sales are being made at the present time, however, as low as 1.20c. There has been no increase in railroad demand for bar iron recently. Specifications for soft steel bars are light. Agricultural implement makers have not yet shown any interest in their future requirements other than to express the belief in some cases that prices should be reduced. Some of the implement makers are complaining a little of slow business and are not inclined to anticipate their requirements. Business in special steels has quieted down. Shafting orders are fair and prices are well maintained. Store business in soft steel bars is moderately good. Seven hundred and sixty tons of reinforcing steel will be required for a wharf shed for the Galveston Wharf Co., Galveston, Tex., covering which general contracts have been let recently.

We quote, Chicago delivery, as follows:

Bar iron, 1.20c to 1.30c; hard steel bars, rerolled, 1.30c to 1.35c; soft steel bars and bands and small shapes, 1.58c to 1.63c, base; hoops, 1.68c to 1.73c; planished or smooth finished tire steel, 1.78c to 1.83c, base; iron finished tire steel, 1.73c, base; smooth finished machinery steel, 1 inch and larger, 1.98c; spring steel, 2.28c; crucible spring steel, 2.78c; tool steel, 7c to 9c, with higher prices for special grades. Quotations on shafting are 57 per cent off the list for carload lots, and 52 per cent off for less than carload lots, carload freight allowed to points in base territory.

On iron and steel from local stock, we quote as follows:

Bar iron, 1.80c to 1.90c per pound base; soft steel bars, 1.80c to 1.90c per pound base; soft steel hoops, 2.10c to 2.20c, full extras.

Structural Material.—There is some increase in activity noted in the structural market in the west, although no contracts were let last week in the immediate Chicago district. Structural contracts reported let in the Chicago market will require 8,385 tons of plain material and it is interesting to note that 2,850 tons of this is railroad business. The largest single letting was the Southwestern Life Insurance building, Dallas, Tex., taken by the American Bridge Co. The Oregon Short Line railroad has let a contract for 200 tons of rods for Howe truss spans in Idaho, and the Chicago, Indianapolis & Louisville Railway Co. has let 150 tons for deck girder and I-beam spans in Indiana. Other structural contracts reported in the Chicago market last week are as follows: Security Bank & Trust Co., bank building, Oakland, Cal., 400 tons, to McClintic-Marshall Co.; Roman Catholic orphan asylum, San Francisco, 565 tons, to Ralston Iron Works, San Francisco; Chicago & Northwestern Railway Co., signal bridges, 270 tons, to Worden-Allen Co.; United Railway Co. of St. Louis, punched beams and angles, 220 tons, to Missouri Bridge & Iron Co.; Chicago & Northwestern Railway Co., power house at Boone, Ia., 680 tons, to Milwaukee Bridge Co.; extension to machine shop for C., St. P., M. & O. Ry., at St. Paul, 140 tons, and bridges for double-tracking line between Merrill and Wyeville, Wis., 390 tons, to American Bridge Co.

We quote, structural material, f. o. b. Chicago, as follows:

Beams and channels, 15 inches and under, 1.58c to 1.63c. For extras, see Pittsburg report.

Plain material, out of store, is as follows:

All angles, 3 inches and larger, including 6 inches, $1.80 to $1.90 per 100 pounds; angles over 6 inches, $1.90 to $2 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.80 per 100 pounds, base; channels, 3 inches and larger, $1.80 per 100 pounds, base.

Rails and Track Supplies.—Orders for standard rails last week were fairly heavy. The leading interest took 10,000 tons, including 8,000 tons of 85-pound rails for the new Twin City-Kansas City short line of the Rock Island. This makes a total of 18,000 tons which the Rock Island has purchased this year. Specifications for track supplies continue heavy and new business comparatively light. Orders for light rails are holding up very well. The Gary rail mill is running about 65 per cent capacity.

For prices on standard sections see Pittsburg report.

We quote, light rails, f. o. b. Chicago, and track supplies, f. o. b. Joliet, as follows:

Light rails, carloads, 40 to 45-pound, 1.16c to 1.20½c; 30 to 35-pound, 1.19½c to 1.24c;

16, 20 and 25-pound, 1.20½c to 1.25c; 12-pound, 1.25c to 1.29½c.

Light section relayers, 45 pounds and under, subject to inspection, $21 to $23; standard section relaying rails, subject to inspection, $23.50 to $24.

Track supplies, f. o. b. Joliet, angle bars, 1.50c to 1.60c; railroad spikes, 1.65c to 1.75c; smaller size spikes, 1.70c, base; track bolts with square nuts, 2.15c to 2.25c, base.

Plates.—The local plate mills continue to operate under fair schedules although new business is a little light. There is still evidence of cutting in the western plate market and prices are a little uncertain. A Chicago firm has taken a contract from the city of Tacoma, Wash., for 1,100 tons of riveted steel pipe for the Green river reservoir project. About 2,100 tons of steel pipe bands will also be required and it is probable that foreign material imported from Europe by water will be used. The Burlington is understood to have about closed for 1,000 steel gondola cars.

We quote, mill prices, f. o. b. Chicago, as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches wide, 1.58c to 1.63c. For extras, see Pittsburg report.

Store prices are as follows:

Tank steel, ¼ inch and heavier, up to 72 inches wide, 1.80c to 1.90c; from 72 inches to 96 inches wide, 1.90c to 2c; 3-16 inch up to and including 60 inches wide, 1.90c to 2c; 72 inches, 2.15c to 2.25c; No. 8, up to 60 inches wide, 1.95c to 2.05c. Flange quality and heads, 25c extra.

Sheets.—The local mill continues to operate at about 65 per cent capacity and new orders are fair. Although conditions surrounding the market in the east are unsatisfactory as regards price, the trade in this territory is maintaining quotations without a great deal of difficulty and in this respect conditions seem to be better in Chicago than in eastern cities. Consumers continue to specify rather liberally but are not inclined to anticipate their needs very far ahead.

We quote, store prices, f. o. b. Chicago, as follows:

Blue annealed, No. 10, 2.10c to 2.20c; No. 12, 2.15c to 2.25c. Box annealed, No. 28, 2.75c to 2.85c. Galvanized, No. 28, 3.65c to 3.75c.

For mill prices, see Pittsburg report. Freight to Chicago, 18 cents.

Wire Products.—While the demand for barb wire is heavy, other lines are quieter, particularly nails. There have been rumors of price reductions but these are vigorously denied. Wire makers anticipate an especially heavy fall demand but are prepared for a lull during the summer season.

We quote, f. o. b. Chicago, as follows:

Wire nails, jobbers' carload lots, $1.98; retailers' carload lots, $2.03; retailers' less than carload lots, $2.13; painted barb wire, jobbers' carload lots, $1.98; retailers' carload lots, $2.03; retailers', less than carload lots, $2.13; with 30c for galvanizing; plain wire to jobbers, $1.78; plain wire, retailers' carload lots, $1.83; staples, bright, $1.98.

Merchant Pipe and Tubes.—Frequent rains have delayed building operations to some extent and this has put a damper on the movement of merchant pipe. Jurisdictional fights among the building trades unions in Chicago, particularly the plumbers, are also having an effect on the market and sales are somewhat slow when compared with previous years. Manufacturers do not expect much change in the demand during this month.

We quote, iron and steel pipe and tubes, out of store, as follows:

Iron and Steel Pipe Basing Prices.

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
⅛-⅜ inch	69.2	54.2	63.2	48.2
½ inch	72.2	59.2	66.2	53.2
2 in. to 3 in.	77.2	66.2	72.2	61.2
4½-6 inches	74.2	63.2	69.2	58.2
7-12 inches	71.2	54.2	67.2	50.2
EXTRA STRONG PLAIN ENDS.				
½ inch	70.2	63.2	54.2	52.2
2-3 inches	75.2	68.2	61.2	55.2
7-8 inches	65.2	....	59.2	47.2
DOUBLE EXTRA STRONG.				
½ inch	58.2	50.2	....	....
2-3 inches	63.2	55.2	....	....
7-8 inches	53.2	41.2	....	....

Tubes.

	Lap weld steel. Per cent.	Charcoal iron. Per cent.	Shelby seamless. Per cent.
1 inch	39	..	57½
1¼ to 2¼ inch	55	40	35
2¾ to 3¼ inch	62½	50	46

Cast Iron Pipe.—A number of heavy contracts for cast iron pipe are pending and will be closed this week. This includes 4,500 tons for the city of Milwaukee; 1,575 tons of high-pressure pipe at Toledo, O.; 900 tons of water pipe at Springfield, O., and 2,200 tons at Kansas City, Mo. Current specifications and routine orders are fairly satisfactory and if the pig iron market does not show too much weakness, pipe makers will have no difficulty in maintaining prices throughout the early summer.

We quote the market, f. o. b. Chicago, as follows:

Four-inch water pipe, $25; 6 to 12 inches, $24.50, larger sizes, $24; gas pipe, $1 a ton higher.

Old Material.—Old material prices show general declines, due to inactivity in the market. Some leading consumers have been purchasing scrap a little in excess of their requirements and are now retrenching. Knuckles, couplers and springs have been cut to $10.50 per net ton, Chicago. Re-rolling rails have been reduced to $12.75 and 25c has been shaded from the price of heavy melting steel.

We quote the market, for delivery in consumers' yards, f. o. b. Chicago, as follows:

GROSS TONS.

Old car wheels	$13.00 to 13.50
Old iron rails	15.00 to 15.50
Rerolling rails (5 ft. and over)	12.75 to 13.25
Old steel rails (3 ft. and under)	12.25 to 12.75
Frogs, switches and guards	11.25 to 11.75
Heavy melting steel	11.25 to 11.75
Shoveling steel	10.75 to 11.25

NET TONS.

No. 1 R. R. wrought	$11.25 to 11.75
No. 2 R. R. wrought	10.25 to 10.75
Arch bars and transoms	14.25 to 14.75
Knuckles, couplers and springs	10.50 to 11.00
Shafting	15.25 to 15.75
Iron car axles	18.75 to 19.25
Steel car axles	17.50 to 18.00
Locomotive tires	17.00 to 18.00
Dealers' forge	10.50 to 11.00
Pipes and flues	8.25 to 8.75
No. 1 cast	11.75 to 12.25
No. 1 busheling	9.25 to 9.75
No. 2 busheling	7.25 to 7.75
No. 1 boiler cut	8.50 to 9.00
Boiler punchings	13.50 to 14.00
Cast and mixed borings	5.50 to 6.00
Machine shop turnings	6.50 to 7.00
Railroad malleable	10.75 to 11.25
Agricultural malleable	10.25 to 10.75
Stove plate and light cast scrap	10.25 to 10.75
Angle bars, splices, etc., iron	12.75 to 13.50
Angle bars, steel	10.75 to 11.25

CLEVELAND

Furnaces Not Interested in Ore—Freight Rate Reduced.

Office of THE IRON TRADE REVIEW,
Penton Building, May 2.

Iron Ore.—Some additional reservations have been changed into contracts since the lake freight rate was established, but there is practically no new buying of ore. Furnace operators seem to be entirely indifferent and are in a waiting mood.

The lake freight rate has been fixed at 60 cents, which is a cut of 10 cents from last season's rate. The rates therefore, this year will be 60 cents from the head of the lakes, 55 cents from Marquette and 45 cents from Escanaba. In effect the rates are the same as they were in 1908 and 1909, the unloading charge having been reduced five cents during 1910. Some effort was made to hold the rate at 65 cents, but there was so much tonnage on the market seeking an opening that it could not be held at that figure.

Nearly all the freighters that are in commission are owned by shippers who are having about all that they can do to keep their own boats busy. Practically all of the Pittsburgh Steamship Co.'s vessels will be in commission by the end of the present week. All the vessels of the Hanna fleet are in commission, but some of the other large shippers have not yet started out, and appear to have no immediate plans.

It has developed that a sale of 350,000 tons of ore to a New York state furnace interest reported by THE IRON TRADE REVIEW last week was made on

a basis of a freight rate of 65 cents from the head of the lakes.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $4.50; Mesabi Bessemer, $4.25; old range non-Bessemer, $3.70; Mesabi non-Bessemer, $3.50.

Pig Iron.—With the exception of an inquiry for 3,000 tons of basic for third quarter delivery from the United Steel Co., Canton, O., there is no business of any importance pending. Prices continue unchanged. We quote delivered in Cleveland as follows, the lower quotation being for prompt shipment, and the higher for second half.

No. 1 foundry	$14.75 to 15.25
No. 2 foundry	14.25 to 14.75
No. 2 southern	15.35 to 15.85
Gray forge	13.50 to 14.00
Bessemer	15.90
Lake Superior charcoal	17.50 to 18.00
Jackson Co. 8 per cent silvery	18.50 to 19.00

Coke.—The market continues devoid of interesting features, the only demand being for foundry coke for prompt delivery. We quote:

Connellsville furnace coke, $1.55 to $1.65 for prompt delivery, and $1.75 to $2 for second half. Connellsville foundry coke, $1.95 to $2 for prompt, and $2 to $2.50 for second half.

Finished Material.—Dullness continues, and there is very little demand for any kind of material. Buyers are apparently waiting with the expectation of lower prices. It is estimated that the new city hall will require from 3,000 to 4,000 tons. It may be two months or more before specifications are completed. The bids for the new central Y. M. C. A. building will close about May 13. Sheet prices continue very irregular, but the leading manufacturers seem to be maintaining official quotations. Bar iron business is extremely limited, and the local mills have difficulty in getting enough orders to keep in operation.

Old Material.—So few sales have been made that prices are difficult to determine. Demand for heavy steel has subsided and busheling on track cannot be disposed of. The market locally is as dull as it has been in years. Quotations as follows, gross tons, f. o. b. Cleveland, are largely nominal:

Old iron rails	$15.00 to 15.50
Old steel rails (under 6 ft.)	13.50 to 14.00
Old steel rails (over 6 ft.)	12.50 to 13.00
Old car wheels	12.50 to 13.00
Old steel boiler plate	10.00 to 10.50
Malleable iron (railroad)	12.75 to 13.25
Steel axles	19.00 to 19.50
Malleable iron (agricultural)	11.00 to 11.50
Heavy steel	11.75 to 12.25
Country mixed steel	10.50 to 11.00

We quote, net tons, as follows:

No. 1 R. R. wrought	$13.00 to 13.50
No. 1 busheling	11.00 to 11.50
No. 1 machine cast	12.00 to 12.50
No. 1 dealers' wrought	12.00 to 12.50
Axle turnings	8.75 to 9.25
Machine shop turnings	7.50 to 8.00
Cast borings	6.75 to 7.25
Pipes and flues	8.75 to 9.25
Sheet iron	4.00 to 4.50
Wrought drillings	7.50 to 8.00
Stove plate	11.00 to 11.25

CINCINNATI

Small Sales of Pig Iron—Inquiry Confined to Small Lots.

Office of THE IRON TRADE REVIEW,
808 Provident Bank Bldg., May 2.

Pig Iron.—A number of small sales of southern and northern foundry iron comprise the movement of pig iron in this territory the past week. A central Ohio melter took about 700 tons of foundry iron, approximately half southern and half northern, for delivery over the balance of the year, at present quotations. Another central Ohio melter took about 200 tons of southern No. 2 iron at $11, Birmingham. Two hundred tons of fluor spar were sold to a melter in Indiana, while a southern Indiana stove maker took 125 tons of iron. The inquiry for 1,000 tons from Detroit has been withdrawn for the present at least. A local melter is in the market for about 600 tons of foundry iron, including some northern foundry, southern foundry, and some special iron. A nearby melter took 500 tons of foundry iron for prompt shipment. No large inquiries or sales have appeared. Silvery iron holds nominally at $17.70, delivered, although there is no inquiry to test the market, and a melter could probably close at 25 cents a ton lower than this. Malleable is quiet at about $14 to $14.25. What movement there is in northern basic is at about $15.25, delivered, while contracts for the remainder of the year would go at about 15 cents above this figure. No further decrease in prices seems probable, due to the reduction in ore values, and the general policy of furnaces seems to be to blow out, as an increase in consumption is not imminent. Although there has been some reported shading of prices, it was not sufficient to indicate any reduction. Shipments against contracts for the most part are well maintained and iron is being taken regularly. Based on a freight rate of $3.25 from Birmingham and $1.20 from Ironton, we quote for Cincinnati and southern Ohio, f. o. b., as follows:

Southern foundry No. 2	$14.25
Southern foundry No. 3	13.75
Southern foundry No. 4	13.50 to 13.75
Southern gray forge	13.00
Mottled	12.75
Southern No. 1 soft	14.75
Southern No. 2 soft	14.25
Standard southern car wheel	25.25
Northern No. 2 foundry	15.20
Northern No. 3 foundry	14.70
Northern No. 4 foundry	14.20
Jackson county 8 per cent silicon	17.70

Coke.—Both furnace and foundry coke is active and many year contracts are being renewed at this time. A southern railroad interest has come out for from 2,000 to 4,000 tons of foundry coke for the ensuing 12 months. The inquiry for 600 tons of 48-hour coke is still open. Foundry coke aggregating 8,000 to 10,000 tons is being figured on at this time. About 6,000 tons of furnace coke has been closed at approximately $2.25. While $1.75 is the selling figure for most contracts for Pocahontas coke, some is being sold as low as $1.60. Wise county coke is selling from $2 to $2.25 for prompt shipment for foundry coke and from $1.75 to $2 for prompt shipment for furnace coke, though a majority of sales for furnace are at about $1.85 and for foundry at $2.25 for prompt and $2.35 for contract, with some contract running up to $2.40. We quote the various producing districts as follows:

	Prompt shipment.	Contract second half.
Connellsville district:		
Foundry coke	$2.00 to 2.25	$2.25 to 2.40
Furnace coke	1.60 to 1.65	1.75 to 1.85
Wise county district:		
Foundry coke	2.00 to 2.25	2.10 to 2.35
Furnace coke	1.75 to 2.00	*Sliding [scale basis.
Pocahontas district:		
Foundry coke	2.05 to 2.15	2.10 to 2.35
Furnace coke	1.60 to 1.75	1.75 to 1.85
New river:		
Foundry coke	2.50 to 3.25	2.60 to 3.25
Furnace coke	2.10 to 2.15	2.10 to 2.20

*Sliding scale basis means $1.60 for coke based on $9, Birmingham for pig iron, with an advance of 16 2-3 per cent of the amount over $9 at which pig iron is quoted. This is the usual basis. Other forms of sliding contracts are also made.

Finished Material.—Steel bars continue very firm and active at $1.40, Pittsburg. Cast iron pipe, agricultural machinery and concrete steel move well, while structural material throughout is a little quiet. Wire products have a good demand and cotton ties are beginning to be active. Boiler plate is being taken in good lots.

Old Material.—A reduction of 50 cents a ton is common on many lines of old material during the past week. Old iron rails are now quoted at $14.50 to $15. Heavy turnings, No. 1 cast scrap and burnt scrap have all been cut from 50 cents to 75 cents a ton, and there is little selling at these figures, though considerable material is coming in from the country districts. No. 1 railroad wrought is quoted at about $12.50 with No. 2 railroad wrought $1 a ton lower. We quote the old material market for delivery in consumers' yards, f. o. b. Cincinnati, and southern Ohio, as follows:

GROSS TONS.

Old iron rails, gross	$14.50 to 15.00
Old steel, rerolling, gross	13.00 to 14.00
Old iron axles, gross	19.25 to 19.75
Steel melting scrap, gross	11.00 to 11.75
Car wheels, gross	12.25 to 12.75

NET TONS.

Old No. 1 R. R. wrought	$12.25 to 12.75
No. 1 machinery	11.00 to 12.00

No. 1 busheling	10.00 to 10.50
Stove plate	8.25 to 9.00
Machine shop turnings	6.50 to 7.00
Cast borings	5.75 to 6.50
Grate bars	9.00 to 9.75
Sheet scrap, busheled	7.25 to 8.00
No. 1 cast scrap	10.50 to 11.00
Heavy turnings	7.75 to 8.75

PHILADELPHIA

Pig Iron Buyers Listless—Large Structural Tonnage.

May 1.

Pig Iron.—Practical stagnation holds the pig iron market and the recent cut in ore prices instead of stimulating business, has temporarily at least, had the contrary effect of making buyers even less inclined to close than has been the case in the past quiet month. It is not surprising that the reduction on lake ores should have continued to manifest little bearing upon conditions in the eastern Pennsylvania district because of its independence of such a supply or that it has done more than to give to consumers an additional argument for asking concessions. The market's dullness is precipitating action the contemplated blowing out of additional furnaces because of the lack of both demand and profits at ruling levels. Such further adjustment of manufacturing activity seems necessary despite the fact that only 13 out of 31 merchant furnaces, or about 42 numerical per cent of the capacity in the Lehigh and Schuylkill valleys in eastern Pennsylvania and in New Jersey are now blowing. Furthermore, two of the active furnaces, Carbon and Sheridan, are on the verge of going out and the Robesonia stack will follow some time in the next several months. This will reduce active capacity in these districts to about 36 per cent. In Virginia the last blowing stack of the historic Lòngdale Iron Co. plant will blow out in a week or two. Sales are comparatively few and for small quantities. Business is scarcely sufficient to establish prices which on the face appear firm at the minimum of $15.50, delivered, for eastern Pennsylvania 2X foundry grades, and $13, furnace, in Virginia. Deliveries at these prices are becoming more extended, and this is the direction which concessions are now taking. Neither mill nor pipe forge grades are active. The leading pipe maker is still in the market for 5,000 to 6,000 tons of lower silicon for forward shipment and other pipe companies are sounding the market. One eastern mill which has been seeking a small lot of basic is understood to have closed for 1,000 or 2,000 tons for early shipment from the Lebanon district at $15, delivered. Though leading eastern consumers of this grade have bought no iron of late, basic could be readily obtained at $15, delivered, and on a large tonnage this price could probably be shaded. Little low phosphorus demand is current. It is reported that one of the Virginia furnaces has recently started to make this grade largely for its own needs.

We quote for prompt and second quarter shipment as follows:

No. 1X foundry	$15.75 to 16.25
No. 2X foundry	15.50 to 15.75
No. 2 plain	15.00 to 15.50
Standard gray forge	14.75 to 15.00
Basic	15.00
No. 2X Virginia	15.80 to 16.05
No. 2 southern	15.00 to 15.50
Standard low phosphorus	21.00 to 21.50

Finished Material.—Apart from structural material, in which there is an encouraging tonnage coming out, buying of finished products continues along narrow lines. Incoming business is spasmodic in most lines and is still showing a tendency to gradually fall away so that makers are encountering greater difficulty in maintaining operations which are now about 65 per cent in the east.

The eastern sheet mills report their small order sales are sufficient to sustain their operations. Plate specifications are irregular, but the tonnage coming to some eastern mills is quite satisfactory. Billets are of small lots, but prices are firm. Bars, both iron and steel, show little activity and rerolled bar makers are more active for business, in some cases at low prices, reported to be about 1.25c, Pittsburg, or 1.40c, Philadelphia. Little is now heard as to concessions in plate prices in eastern markets.

It is estimated that structural projects in an active state in the immediate Philadelphia and southeastern districts call for 25,000 tons at least, the largest single contract of which is that of crossing work for the Reading railroad in this city, requiring 5,000 to 10,000 tons. The Seaboard Air line has placed 2,700 tons of bridge work with the Virginia Bridge & Iron Works; the Piedmont Traction Co., 1,400 tons with the American Bridge Co., for bridges in North Carolina, and 300 tons for buildings for the insane asylum at Schuylkill Haven, Pa., has gone to the Eastern Steel Co. Bids go in this week on 1,000 tons for the Fire Association building, this city, and on May 9 for about 500 tons for the Springfield avenue bridge, this city. The Chestnut street bridge, this city, about 400 tons, is again up for bids May 9. The architects have taken bids on about 1,000 tons for the Virginia Life Insurance Co. building, Richmond. An addition to the Maryland Casualty Co. building, Baltimore, about 500 tons, and the Riggs hotel, Washington, will soon be up for bids. Contracts for clearing the site for the Syndicate building, Richmond, have been let, and this enterprise, which will take 1,000 tons or more, will soon be in the contract stage. Frank L. Wagner, Washington, has the general contract for the Army and Navy club, Washington, but the steel, about 700 tons, is still pending.

We quote, for delivery in Philadelphia and vicinity:

Structural shapes, 1.55c to 1.60c; steel plates 1.55c to 1.60c; steel bars, 1.55c to 1.60c; refined bar iron, 1.35c to 1.40c; cut nails, $1.80 to $1.85; blue annealed sheets, No. 10 gage, 1.80c; 4 x 4-inch open-hearth rolling billets, $25.40; forging billets, $30.40.

Old Material.—Dealers in scrap report they are able to interest consumers practically only at price concessions and such transactions usually call for small tonnages. Though the market is dull and inclined to weakness upon the indications of small buying, it is nevertheless in such a state that any large tonnage of most grades could not be obtained except at advances. A large eastern steel interest recently took on about 5,000 tons of turnings, paying $9.50 to $10 delivered for such a quantity though on light purchases the current market is quotable from $9 to $9.50 delivered. The principal consumers of heavy melting steel are still indifferent to contracting for tonnages and because they are still in a good position on stocks, are not offering much over $13 delivered for regular material.

We quote gross tons delivered in Eastern Pennsylvania and New Jersey consuming districts as follows:

Old iron rails	$17.00 to 17.50
Old steel rails (re-rolling)	14.50 to 15.00
Heavy melting steel	13.00 to 13.50
Old car wheels	13.00 to 13.50
Old steel car axles	19.00 to 20.00
Old iron car axles	25.00 to 26.00
No. 1 R. R. wrought	15.25 to 15.75
Wrought pipe	13.00 to 13.50
Cast borings	8.50 to 9.00
Wrought turnings	9.00 to 9.50
Heavy cast scrap	13.50 to 14.00
Railroad malleable	12.00 to 12.50
Stove plate	10.50 to 11.00

The Portland Mfg. Co., Portland, Mich., is erecting a brass foundry 40 x 60 feet in size to be operated in connection with its present plant. All the machinery has been purchased, including complete equipment of Arcade molding machines.

Andresen-Evans Co., Chicago, manufacturer of grab buckets for handling ore, coal, crushed stone, sand, etc., has removed its offices from 1501 Monadnock building to 635 Railway Exchange building, Chicago.

Emerson Typewriter Co., Woodstock, Ill., has certified to an increase of capital stock from $50,000 to $250,000.

ST LOUIS

A Small Tonnage of Pig Iron Sold—Foundry Coke Sale.

May 1.

Pig Iron.—The inquiry put out the latter part of last week for 200 tons of southern No. 2 pig iron for delivery over the next three months was closed today, and another inquiry made its appearance for 500 tons of southern No. 2 for delivery up to Oct. 1. With these exceptions, and a few sales of small lots, business has not improved since last week and is so dull as to approach stagnation. Prices are firm at $11 for southern No. 2, Birmingham basis, and at $14 to $14.50, Ironton, for northern iron. Quotations on southern iron, delivered, to which the Birmingham freight of $3.75 has been added, follow:

Southern No. 1	$15.25 to 15.75
Southern No. 2	14.75 to 15.25
Southern No. 3	14.25 to 14.75
Southern No. 4	13.75 to 14.25

Coke.—A sale of 5,000 tons of Stonega coke has been made for St. Louis delivery over the remainder of the year. Aside from this sale business for the past week has been confined to small tonnages.

We quote 72-hour Connellsville foundry grades, $2.35 to $2.50 for whole of 1911; 72-hour foundry, $2 to $2.25, on tracks and for immediate delivery; 48-hour Connellsville furnace, $1.60 to $1.85; best 72-hour Virginia foundry, $2 to $2.35; 48-hour Virginia furnace, $1.60 to $1.85. The freight to East St. Louis and St. Louis is $2.80, and $2.70 from the Virginia fields when shipment is destined beyond St. Louis.

Finished Material.—Demand for finished material continues fair in the St. Louis territory, and prices are maintained without difficulty. Steel bars are quoted out of stock at $1.85, St. Louis. Standard rails are in good demand for interurban work, and one sale was made within the last few days of 500 tons to go to Oklahoma. Fastenings also are in good demand, and prices are easily upheld. The demand for light rails has fallen off slightly, but there has been an increased inquiry from mining and lumber interests. Bars are moving nicely.

Old Material.—Business in scrap show no improvement over the last few months. Prices, however, remain as follows:

Old car wheels	$13.00 to 13.50
Old iron rails	14.00 to 14.50
Rerolling rails (4 ft. and over)	12.50 to 13.00
Old steel rails (2 ft. and under)	11.50 to 12.00
Light section relayers, 45 lbs. and under, subject to inspection	21.00 to 23.00
Relaying rails, subject to inspection	24.50 to 25.00
Frogs, switches and guards	12.00 to 12.50
Heavy melting steel	12.00 to 12.50
Shoveling steel	12.00 to 12.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$11.50 to 12.00
No. 2 R. R. wrought	10.50 to 11.00
Arch bars and transoms	13.50 to 14.00
Knuckles, couplers and springs	12.00 to 12.50
Shafting	14.50 to 15.00
Iron car axles	18.00 to 18.50
Steel car axles	18.00 to 18.50
Locomotive tires	14.00 to 14.50
No. 1 country wrought	9.25 to 9.75
Pipes and flues	8.50 to 9.00
No. 1 busheling	9.75 to 10.25
No. 2 busheling	6.50 to 7.00
No. 1 boiler cut	8.50 to 9.00
Boiler punchings	9.75 to 10.25
Cast and mixed borings	5.00 to 5.50
Machine shop turnings	7.00 to 7.50
Railroad malleable	9.50 to 10.00
Agricultural malleable	8.50 to 9.00
Stove plate	9.50 to 10.00
Angle splice bars, iron	12.25 to 12.50
Angle splice bars, steel	11.00 to 11.50

BUFFALO

Small Amounts of Pig Iron Placed at Rumored Concessions.

May 2.

Pig Iron.—The slight improvement in the condition of the local market reported last week has disappeared, and the same general dullness that has marked the last few months is once more noticeable. Very little iron has been placed, and that in small amounts and scattered, and the tonnage inquired for is lighter than for several weeks past. No changes in prices are admitted by the furnace interests, but rumors of slight concessions continue in circulation. One report to the effect that 5,000 tons were recently placed at just a shade over $13 could not be verified. However, on the whole there is a determination to maintain prices in spite of the lack of interest shown by buyers, which is generally attributed to the recently announced reduction in ore prices, and it is possible that the output may be reduced before prices are allowed to go even a shade lower. The Buffalo Union Furnace Co. blew out its stack "C" the past week. We quote, f. o. b. furnace, as follows:

No. 1X	$14.00 to 14.50
No. 2X	13.75 to 14.25
No. 2 plain	13.75 to 14.25
No. 3	13.75 to 14.00
Gray forge	13.50 to 14.00
Malleable	14.00 to 14.50
Basic	14.00 to 14.50
Charcoal	17.25 to 18.00

Finished Products.—Business in structural material continues brisk and the fabricators are busy. Structural jobs let in the past week have been mostly small but quite numerous, and a few larger jobs are still on the architects' boards and will probably be let in the near future. An increased Canadian demand for structural material is reported by the agencies having territory across the border and there are indications of continued activity. There is little change in the general lines, bar and cold roll steel are not particularly active, but there is a good demand for tin plate and wire products.

Old Material.—The market is dull and few sales have been made in spite of low prices. The prices here given are largely nominal. We quote gross tons f. o. b. Buffalo as follows:

Heavy melting steel	$12.75 to 13.00
No. 1 railroad wrought scrap	14.75 to 15.25
No. 1 railroad and machine cast scrap	14.00 to 14.50
Old steel axles	18.50 to 19.00
Iron axles	23.00 to 24.00
Car wheels	13.75 to 14.25
Railroad malleable scrap	13.75 to 14.00
Machine shop turnings	7.00 to 7.25
Cast iron borings	6.50 to 6.75
Low phosphorus steel scrap	17.00 to 17.50
Old iron rails	16.75 to 17.25
Tank iron	10.75 to 11.25
Sheet iron	6.50 to 7.00
Pipes and flues	10.75 to 11.25
Stove plate	12.00 to 12-50
Grate bars	11.50 to 12.00
Boiler plate	11.50 to 12.00

BIRMINGHAM

More Talk of Active Stacks Being Blown Out.

May 1.

Pig Iron.—The week just closed has been like its predecessor in that sales were at the minimum, and prices remained pegged at the $11 figure No. 2 foundry basis. Buyers seem to feel certain that they have everything to gain by waiting, and all indications point to a schedule certainly no higher than $11 for the next several months. One furnace on foundry iron was blown out last night, which will take about 200 tons daily off the market. It has been expected that the Steel Corporation would blow out one of its furnaces at Ensley, but both stacks there have been in blast are still operating today, while the situation at the Bessemer furnace plant remains unchanged from a production standpoint. Not a single large transaction is reported this past week, and none of the sellers here reports any deals of consequence pending. No. 4 Foundry is about the only grade that appears to be a little short. It is in ready demand by the pipe makers at $10.

Cast Iron Pipe.—Only one large inquiry seems to be pending now and that comes from Kansas City. It is expected, of course, that this order will be secured by one of the three water pipe interests here, though the placing of the business may be delayed a few weeks. Prices remain quotable on board cars at foundries here, per net ton: 4 to 6 inches, $23; 8 to 12 inches, $22; over 12 inches, average $21,—with $1 higher for gas pipe.

Coal and Coke.—In sympathy with

the business of the country at large in industrial lines, the fuel markets here are lagging. Many mines are running on short time. The putting in blast of some by-product ovens recently finished, and the blowing out of one pig iron furnace, has had a tendency to weaken materially the market for furnace coke. The demand for foundry coke is quieter. Few contracts are being closed for either coal or coke, the buyers preferring to take their chances for a time at least on the "hand-to-mouth" policy in purchasing.

Old Material.—Dealers report some fair sales during last week, but the margin of profit is claimed as being too small to make trading desirable, except from the standpoint of doing some actual business. The scrap market is expected to remain very dull until there is a general improvement in collateral lines. Dealers' prices remain nominally as follows on board cars here:

Iron axles	$15.00 to 16.00
Iron rails	13.00 to 13.50
Steel axles	14.00 to 14.50
No. 1 R. R. wrought	12.00 to 12.50
No. 2 R. R. wrought	11.00 to 12.00
No. 1 country scrap	8.50 to 9.00
No. 2 country scrap	7.50 to 8.00
No. 1 machinery	10.00 to 11.00
No. 1 steel	9.50 to 10.00
Old standard car wheels	11.00 to 11.50
Light cast and stove plate	8.00 to 8.50

NEW YORK

Numerous Structural Contracts Let and Pending—Pig Iron Dull.

Office of THE IRON TRADE REVIEW,
1115 West Street Bldg., May 2.

Iron Ore.—Further efforts of lake ore sellers the past week to interest eastern Pennsylvania and New Jersey furnaces in lake ore contracts have had little success. As far as learned, no sales of lake ore have been made in these districts and none is likely to be closed, because the prices on ores are not competitive. There is not a great deal of ore buying of any character now being done in the east. The instability of the ocean freight market and the supply of boats is seriously interfering with the making of further sales of foreign ores, especially those from Mediterranean ports. Wabana, Newfoundland, ore shipments to eastern furnaces were begun the past week by the arrival at Philadelphia of the steamer Tellus, with a cargo of 12,400 tons. Sales of Port Henry ore have aggregated a considerable tonnage and these sellers are now in a comfortable position.

Pig Iron.—Buyers continue to talk the reduced ore prices as a ground for concessions, but they are meeting with little success. The market is quiet and as buying is being done in a hand to mouth style, large inquiries or sales are the exception. A fair aggregate amount of basic, about 10,000 tons, has recently closed in the east and has fixed the market at about $15.00, delivered, on ordinary business. On attractive tonnages, it is probable that about $14.75, delivered, could be done. It develops that one eastern steel works has taken 5,000 to 6,000 tons for early shipment from Eastern Pennsylvania makers; a New Jersey steel foundry has taken 2,000 tons for last half from the same district and there have been some other scattered purchases. Another New Jersey foundry is out for 500 to 1,000 tons of this grade. The leading cast iron pipe interest has bought 5,000 tons of lower foundry grades for Buffalo shipment and has also made some purchases against recent inquiry of 6,000 tons for its New Jersey plant. It has decided not to close for the balance at present. This matter has been up several times in the past. Another pipe interest has bought 500 tons for an up-state plant and also additional lots for a New Jersey works. A third New Jersey pipe interest is still sounding the market for a round lot. The 4,750 tons of mixed grades for the New York Air Brake Co., is still under negotiation. All pending matters seemed characterized by a more deliberate action in closing on the part of buyers. New England sales of the week have been light. There is some malleable pending from Connecticut. Prices in the main are holding well. At New Jersey points, No. 2X iron is selling from $15.50 to $15.70, delivered, and in New England from $16.25 to $16.50, delivered, representing from about $14.75 to $15.75, eastern Pennsylvania, and $13.75 to $14.00, Buffalo furnace. We quote for prompt and second quarter shipment as follows:

Northern foundry No. 1	$16.00 to 16.25
No. 2X foundry	15.50 to 15.75
No. 2 plain	15.00 to 15.50
No. 2 Virginia	15.80 to 16.05
No. 2 southern foundry	15.25 to 15.75
Malleable	15.75 to 16.00
Gray forge	14.75 to 15.00

Ferro-Alloys.—An eastern steel works has recently purchased 300 tons of 11 per cent Bessemer ferro-silicon around $25.00, delivered. It is believed domestic material was furnished. Otherwise the ferro-alloy market was very quiet. We quote 80 per cent ferro-manganese at $36.50 to $37.00, Baltimore, and 50 per cent ferro-silicon at from $53.00 to $54.00, Pittsburg.

Cast Iron Pipe.—Complaint is still to be heard among makers on the extremely low prices being quoted in some directions. A fair volume of business continues. Bids went in this week on 325 tons of 24-inch for Perth Amboy, N. J. The Standard Cast Iron Pipe & Foundry Co. took 375 tons for Presque Island, Me., at a very low price. We quote 6-inch pipe at from $21.00 to $22.00, f. o. b. New York, in carload lots.

Finished Material.—Several unusually large projects in the metropolitan district, which have reached definite form, are giving the structural situation a very favorable appearance, contrasted with other lines. Three of these enterprises, the Interborough elevated extensions, the large bridge across Hell Gate, by the New York Connecting Railroad Co., and the Woolworth skyscraper, call for almost 200,000 tons of steel by estimate, while there is a considerable number of other fair-sized undertakings under way in this city and vicinity. Apart from the structural situation, the finished market is moving sluggishly and new business entered continues less active.

An important development of the week was the asking for bids for the first portion of the Hell Gate bridge, calling for about 35,000 tons. Eventually as much additional tonnage will be needed to complete the bridge and approaches. No action has yet been taken on the 80,000 tons for the Interborough extensions and an award will probably be delayed, because the final franchise authority has not yet been procured from the city authorities. Plans came out this week for 4,500 tons for the New York Telephone Exchange, at Lickenward and Walker streets, and on about 5,000 tons for the Bamberger store, Newark, N. J. Figures on the latter go in Thursday. The Carlton hotel, Montreal, requiring 2,500 tons, is up. Plans for the new building of the department of engraving and printing are to be renewed. Originally they called for about 4,000 tons. The Boston & Maine railroad has up 800 tons in bridges.

In the week's awards, the American Bridge Co. secured 1,600 tons for the Baltimore & Ohio railroad bridge at Wheeling, and 1,400 tons for the Haviland building, East Thirty-sixth street, this city. The New England Structural Co. has 1,300 tons for Boston & Albany railroad bridge; A. E. Norton & Co., 1,700 tons for the Fabian Construction Co. loft, West Twenty-sixth street, New York City; Ravitch Bros., 650 tons for a loft on West Thirty-fifth street; Hay Foundry & Iron Works, 400 tons for the Franklin Simon store, Fifth avenue, this city; the Radley Iron Works, 400 tons for the Liberty Storage building, West Forty-fifth street, and Levering & Gerrigues, 400 tons for a loft on East Twenty-fifth street. It is now understood that the Insurance Exchange building, Maiden Lane, this city, 8,000 tons, will be fabricated by Milliken Bros., Inc. This work was originally

reported as having gone to the American Bridge Co.

We quote, New York delivery, as follows:

Angles, 3 to 6 inches x ⅛ inch and heavier, to 1.61c; tees, 3 x ¼ inch and heavier, 1.56c to 1.61c; plates, carload, tank, 1.56c to 1.61c; boiler steel, 1.66c to 1.71c; marine boiler, 1.96c to 2.01c; bar iron, 1.37c to 1.42c; soft steel bars, 1.56c to 1.61c.

Rails and Track Material.—The Florida & East Coast railroad has placed 14,000 tons of heavy sections with the Maryland Steel Co. The Seaboard Air Line, which has been in the market for 15,000 tons, has not yet formally closed on this inquiry, but the bulk of it is expected to also go to the Sparrows Point mill. An ordinary amount of girder rails is pending.

Old Material.—Scrap conditions continue quiet with business being done in small lots. With steel works operations declining, recent purchases by eastern consumers of heavy steel will carry them through a longer period than originally expected and they are now indifferent except at their own prices. Other grades are sluggish.

Old car wheels	$11.50 to 12.00
Old iron axles	21.50 to 12.00
Old steel shafting	15.50 to 16.00
Heavy melting steel	11.00 to 11.25
No. 1 R. R. wrought	13.75 to 14.00
Iron track scrap	12.00 to 12.50
Wrought pipe	10.50 to 11.00
Cast borings	5.75 to 6.25
Wrought turnings	7.00 to 7.50
Heavy cast scrap	11.50 to 12.00
Railroad, malleable	10.00 to 10.50
Stove plate	9.50 to 9.75
Grate bars	9.00 to 9.50

METAL MARKETS

New York.

May 2.

Tin.—The April pig tin statistics were published yesterday and in two essential features showed results that varied considerably from estimates that were fairly general at the end of April. The shipments from the east fell to 3,115 tons; compared with 4,487 tons in March, and deliveries into domestic consumption were only 3,300 tons. Both of these items of the monthly report were expected to approximate 4,000 tons. The net result of appropriations during April was to decrease the visible supply 2,241 tons. The total visible, as of May 1, is 14,441 tons. Of this, 6,145 tons are credited to London and Holland stocks; 3,252 tons to the United States, and 5,044 tons are afloat. Notwithstanding the conspicuous falling off in deliveries into domestic consumption the statement is accepted in the local trade as a favorable one for the foreign syndicate. Consumers, however, are buying very cautiously. Spot tin today is 42.25c, bid, and 42.50c, asked, with very little demand. May is slightly easier, being 42.10c, bid, and 42.50c, asked.

The London market closed steady at recessions of £1 5s in spot and £1 in futures. Spot closed at £194 5s and three months at £191 5s. Tin arrivals during April aggregated 4,560 tons.

Copper.—The decrease of 3,690 tons in European copper stocks, and a large total of exports from the United States during April, has imparted a better tone to the markets for the metal, but prices have not advanced. Domestic demand is far from satisfactory, however. Consumers are willing to take the metal in large quantities, but to interest them offers to sell must be made close to 12c, delivered, for electrolytic, and 12.25c for lake. Small sales of electrolytic have been made during the past week at 12.12½c, cash, New York. The leading sellers are holding at 12.25c and 12.37½c, delivered 30 days. Exports during April were 27,466 tons.

Lead.—The lead market is very quiet and some sellers have lowered the price to 4.42½c in New York. The leading interest continues to ask 4.50c for shipments, however, and other important sellers 4.45c.

Spelter.—There is but a very small demand for spelter, and the price has been shaded to 5.42½c for prompt shipments from St. Louis to this market.

Antimony.—The antimony market is stagnant, and prices very irregular, on all brands but Cookson's. The full convention figure of 9.50c is demanded for that brand. Hallett's is 8.87½c, and Hungarian is 8.25c.

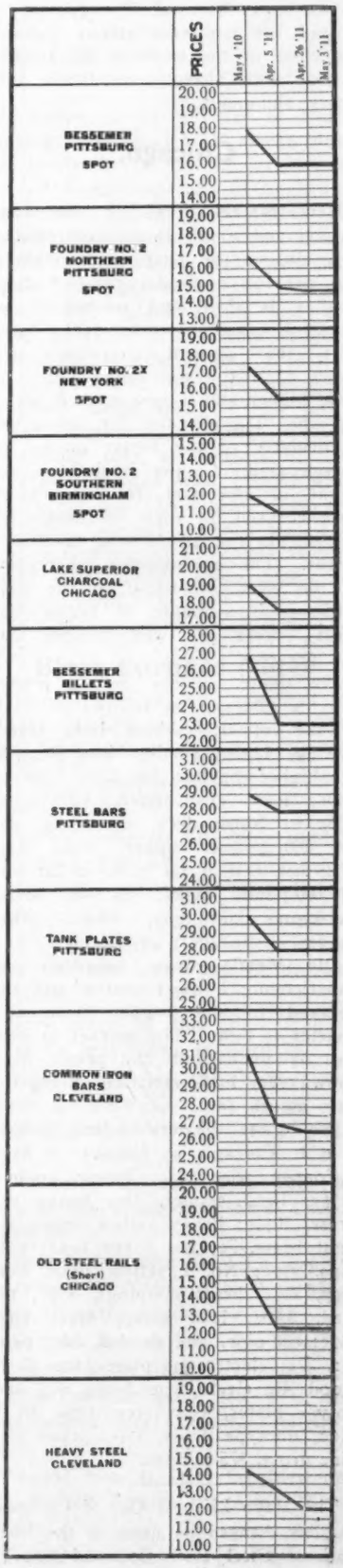
St. Louis.

May 1.

Lead and Zinc.—Choice lots of zinc ore sold as high as $44 a ton in the Missouri-Kansas-Oklahoma district last week, with 60 per cent qualities bringing from $36 to $41 a ton in the open market. The price for contract ores, 60 per cent assay base, was $39.59, based on a spelter average of 5.305c for the previous week. At the close of the week spelter was selling at 5.30c. Some of the older camps are beginning to show decreased outputs, but their places are being supplied by heavy productions from some of the new camps, and as a result the tonnage for the entire district continues to be heavy.

The Edgar Zinc Co., forced out of the Mexican market because of the insurrection, continues to purchase large quantities in the Missouri-Kansas-Oklahoma district. This company is reported to have purchased 2,000 tons last week, or almost as

PRICE CHART



much as all of the smelting concerns buying in the district. Calamine was slightly weaker at $20 to $22 a ton, with choice lots bringing $24 on an assay base of 40 per cent.

Lead ore continues strong toward the close of the week at $56 to $60 a ton, with sharp competition and heavy shipments.

Chicago.

May 1..

New Metals.—Lead is somewhat weaker and some brands were shaded 2½c during the past week, making the present minimum price 4.32½c. Spelter is slow and unchanged in price. Local consumers feel, however, that present quotations are about $1 a ton too high. Tin is a trifle higher and is now quoted 42½c, Chicago. The demand for antimony, particularly of the better grades, is encouraging. Copper is dull on account of the fact that consumers have covered for their immediate requirements and are looking for lower prices. The consumption of copper in the west, according to the best information available, is heavy, but most buyers are well covered for the present.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Lake copper, carload lots, 12¾c; casting, 12⅝c; smaller lots, ¼c to ⅜c higher. Spelter, car lots, 5.35c to 5.40c; lead, desilverized, 4.32½c to 4.35c in 50-ton lots; corroding, 25c per 100 pounds higher; sheet zinc, $7.25 list, f. o. b. La Salle, in car lots of 600-pound casks; pig tin, 42½c; Cookson's antimony, 10¼c; other grades, 9c to 10c.

Old Metals.—Brass foundries are experiencing a quiet season and the demand for old copper from this quarter is light. The market in general is unchanged and prices have shown very little variation during the past month.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Copper wire, 12c; heavy copper, 11⅞c; light copper, 11c; heavy red brass, 10½c; heavy yellow brass, 9c; light brass, 7c; No. 1 red brass borings, 9½c; No. 1 yellow brass borings, 7½c; brass clippings, 8½c; tea lead, 3.80c; lead scrap, 4⅜c; zinc, 4½c; tin pipe, 35c; tin foil, 34c; pewter, 27c; electrotype plates, free from wood, 4c; electrotype dross, 3c; stereotype plates, 4½c; stereotype dross, 3¼c; linotype dross, 3¼c; prime slab zinc dross, $75 per ton.

The Mayo Lifeboat Co., of Conneaut, O., has changed its name to the International Steel Boat Co., and has removed to Cleveland.

INCREASED INCOME

Shown by Pennsylvania Steel Co. But Surplus is Reduced.

A total income of $4,029,125 from all sources, an increase of $22,846, over 1909, was received from the operations of the Pennsylvania Steel Co. and its subsidiaries during the year ended Dec. 31, 1910, according to the annual report just issued. Interest and depreciation charges and the amount set aside for preferred dividends showed a considerable increase over the preceding year, with the result that the surplus was reduced from $883,044 in 1909 to $58,581 in 1910.

The following is the income account for the year, with comparisons:

		Increase.
Income from operation	$3,779,824	*$ 29,634
Other income	249,301	52,479
Total income	$4,029,125	$ 22,846
Int. on bonds, etc.	1,702,918	261,539
Depreciation	855,403	328,549
Preferred dividends	1,412,293	257,293
Surplus	$ 58,581	*$824,463

*Decrease.

President Edgar C. Felton in his report to the stockholders, tells of increased operations in the company's iron ore mines in Cuba and reviews other raw material supplies of the company as follows:

The coal mining properties located in Cambria and Indiana counties consist of about 16,000 acres of coking coal lands, on which five mines are operating. They produced 790,000 tons of coal in 1900, as compared with 890,000 tons in 1909, the decrease being due to scarcity of labor early in the year. Expenses in connection with these properties except for permanent structures are charged against operating cost, about $45,000 having been so charged in 1910, in addition to $67,000 paid into sinking fund to cover exhaustion of coal. Iron ore is derived from Cuba and the mines at Cornwall, Pa., which latter are controlled by the company. In 1910 the mines near Santiago, Cuba, which have been owned for the last ten years, produced 523,000 tons of hard hematite ore. Money spent on this plant during 1910, $160,000, has been charged to the cost of mining. The mines can be relied on for some years to produce 500,000 tons of ore annually, but future supplies will come from the new mines on the north coast of Cuba, at Mayori and Moa, which contain about 1,400,000,000 tons of iron ore. In 1910 there were mined at these new properties 411,000 tons of ore.

The mines at Cornwall, in which the company owns 54 per cent interest, produced 537,000 tons in 1910, compared with 478,000 tons in 1909. Early in the year the new plant for crushing and storing ore was put into operation. This plant has cost $500,000, which has been paid out of earnings of the ore property. Increased production and lessened cost have resulted.

The raw material output of the company in gross tons during the past year, compared with 1909, is as follows:

	1910.	1909.
Coal	790,000	890,000
Coke	731,000	698,000
Iron ore	1,367,000	1,000,000

Installing Additional Electric Power

Extensive improvements are being made at the plant of Dilworth, Porter & Co., Ltd., Pittsburg. The rolling mill will be enlarged and electric drive will be installed. Orders placed with the General Electric Co. include a 1,500-kilowatt-volt-ampere mixed pressure turbine, which will run from the company's present rolling mill engines; a 25-kilowatt turbo exciter; a 700-horsepower mill motor; a 350-horsepower mill motor; two 20-horsepower totally enclosed motors; two 75-horsepower vertical motors; three 40-kilowatt power transformers; switchboard, controlling apparatus, etc. The 700-horsepower motor will be connected by rope drive to an 18-inch mill. The 350-horsepower motor will be direct connected to a spike rod mill.

Institute Directors.—James A. Farrell, president of the United States Steel Corporation, was elected a director of the American Iron and Steel Institute, for the term of three years at the annual meeting of the members held at New York, May 1. Mr. Farrell succeeds Wm. E. Corey, whose term has expired. The other directors whose terms had expired were re-elected as follows: E. H. Gary, E. A. S. Clarke, Powell Stackhouse and Edgar C. Felton. The conduct of the affairs of the organization by the directors during the past year, was approved. The annual election of officers will take place at a meeting of the directors in the near future.

The Tennessee Coal, Iron & Railroad Co. announces that due to lack of rail orders its steel plant at Ensley will remain idle for a time. It is expected that by June 1 sufficient orders will be in hand to justify a resumption. The Ensley mill operates exclusively on rails, and its suspension is but a reflection of the very light orders that are coming from the railroads now.

The Inland Steel Co. has declared the regular quarterly dividend of 1¼ per cent a share, payable June 1.

Steel Works Furnaces Blew Out Very Rapidly

Curtailment by Merchant Stacks Shows in Output Figures but More Non-Merchant Furnaces Are Idle

Curtailment of the coke and anthracite pig iron production of the country was shown by the returns from blast furnaces for the month of April. The figures are made possible of publication today by the kindly co-operation of blast furnace owners and managers through the medium of the telegraph, telephone and mail. The reduction was not so pronounced as expected because the larger number of furnaces now out were blown [illegible] the latter part of April, and so have not strongly affected the monthly total.

MONTHLY PRODUCTION.

	1911.	1910.	1909.
January	1,766,658	2,599,995	1,788,164
February	1,781,285	2,428,937	1,682,470
March	2,165,764	2,588,736	1,822,644
April	2,045,786	2,477,700	1,730,608
May		2,374,802	1,866,757
June		2,288,279	1,930,029
July		2,158,124	2,088,620
August		2,103,791	2,232,642
September		2,048,461	2,375,589
October		2,086,205	2,604,037
November		1,910,385	2,532,740
December		1,779,899	2,682,702
Total	7,759,493	26,845,314	25,337,002

The total output for April was 2,045,786 tons, a reduction of 119,978 tons compared with March, when 2,165,764 tons were produced. It should be noted that March had one more working day than April. The daily average for April was 68,193 tons, a reduction of 1,670 tons as compared with the daily average for March, which was 69,863 tons. The merchant furnaces showed in the tonnage figures more of the effect of curtailment than did the steel plant stacks. The merchant furnaces produced 573,067 tons in April and 628,973 tons in March, a reduction of 55,906 tons in April; the daily average of merchant furnaces in April being 19,102 tons, while in [illegible] was 20,289 tons, a reduction of 1,187 tons. The steel plant furnaces produced in April 1,455,254 tons and in March 1,519,365 tons; the daily average output for these non-merchant stacks in April being 48,508 tons, and in March 49,012 tons, a reduction in April of only 504 tons on the daily average.

AVERAGE DAILY PRODUCTION.

	1911.	1910.
January	56,989	83,871
February	63,617	86,747
March	69,863	83,580
April	68,193	82,590
[illegible]		76,607
June		76,276
July		69,617
August		67,864
September		68,282
October		67,297
November		63,679
December		57,192

The total stacks active on the last day of April were 215, compared with 236 active on the last day of March, making a net total of 21 stacks blown out in April. By far the larger number of stacks made idle in April were steel plant stacks, for during the month 19 non-merchant furnaces were blown out, while eight merchant stacks were placed on the idle list. Three steel plant stacks and also three merchant stacks were relighted during the month, making a total of 27 stacks blown out and six stacks relighted during April.

The production of ferro in April was 14,825 tons, an increase of 2,407 tons as compared with March, when the output was 12,418 tons. The production of spiegel in April was 2,640 tons, a decrease of 2,368 tons as compared with March, when 5,008 tons were produced.

APRIL PIG IRON.

STATES.	NO. OF STACKS.		NO. IN BLAST LAST DAY OF MONTH.		TOTAL TONNAGE MAKE.		TOTALS.	
			APR.	MAR.	MERCHANT.	NON-MERCHANT.	APR.	MAR.
Pennsylvania	157		83	97	159,289	701,604	860,893	928,402
Ohio	71		46	49	111,582	353,701	465,283	520,163
Alabama	45		19	19	124,604	23,581	148,185	145,552
Virginia	24		10	9	29,174	———	29,174	28,317
New York	26		13	16	56,336	85,940	142,276	157,211
New Jersey	7		1	1	5,150	———	5,150	5,869
Illinois	26		13	14	25,369	141,089	166,458	158,168
Colorado		6		3				
Indiana		8		6				
Maryland		4		3				
Wisconsin		6		3				
				5	19,638	121,572	141,210	128,233
Kentucky		7		2				
West Virginia		4		3				
Tennessee		19		8				
Washington		1		0				
				9	26,632	27,767	54,399	61,484
Georgia		2		0				
Texas		3		0				
Minnesota		1		1				
Michigan		3		2				
Missouri		1		1				
				0	15,293	———	15,293	14,939
Spiegel—All states							2,640	5,008
Ferro—All states							14,825	12,418
Totals	421		215	236	573,067	1,455,254	2,045,786	2,165,764

Blast Furnace Notes

Detroit Furnace Co. relighted its Wayne stack April 25.

On May 1 the Cambria Steel Co. had two stacks operating out of a total of eight.

Federal Furnace Co. blew out its "A" stack April 15.

Gary No. 11 stack was lighted April 1.

"C" stack of the Buffalo Union Furnace Co. was blown out at the end of April.

Mary stack of the Ohio Iron & Steel Co. was blown in April 24.

Furnace "A" of the Youngstown Sheet & Tube Co. was blown out April 21, and furnace "B" was lighted April 4.

The torch was applied to Tod furnace of the Youngstown Steel Co. on April 24.

Jones & Laughlin Steel Co. expects to relight its Aliquippa blast furnaces some time the coming month.

Warwick Iron & Steel Co. blew out No. 2 stack on April 7.

Bird Coleman stack No. 4 of the Lackawanna Steel Co. was relighted April 12.

Central Iron & Steel Co. blew out one Paxton furnace on April 22 for relining.

Central Iron & Coal Co. blew out its Holt, Ala., stack on May 1.

REIS AND PERLEY

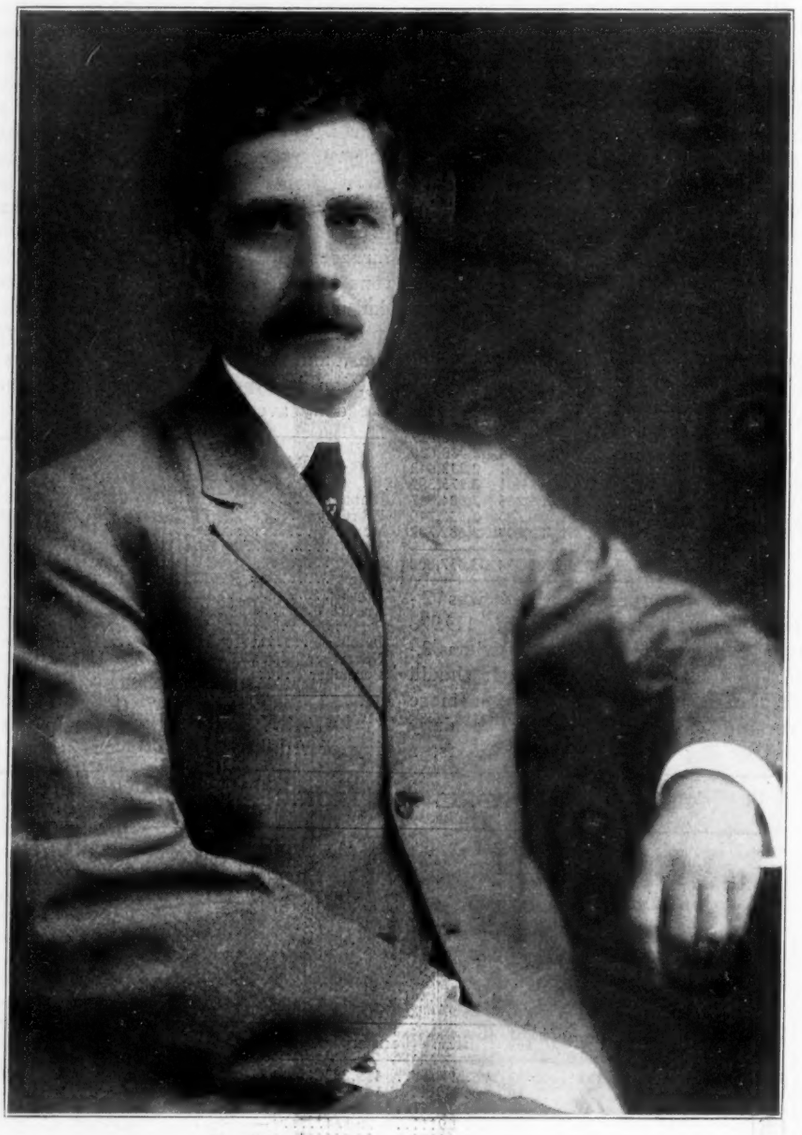
Promoted to Vice President and Assistant to President Respectively.

John Reis, who has been assistant to the president in charge of construction work, became vice president of the United States Steel Corporation, May 1, through appointment necessitated by the resignation of Vice President Wm. B. Dickson. The new vice president will not succeed to all the duties formerly carried on by Mr. Dickson, but will continue to give his attention largely to construction activities of the Corporation with other work to be assigned him.

Mr. Reis comes from a prominent steel family. His father at one time was one of the largest manufacturers of rolled iron in the United States, and each of his five brothers became interested in some branch of the manufacture of iron and steel and has attained a high position. Wm. Reis, now retired, was president of the National Steel Co., when it was absorbed by the United States Steel Corporation in 1901; J. M. B. Reis was also active in the affairs of the National Steel Co. and was in charge of the development of coal and coke properties; Geo. Reis, a third brother, is the present vice president of the Minnesota Steel Co., a subsidiary of the United States Steel Corporation.

Mr. Reis was born in Niles, O., in 1861, and was the son of Geo. C. and Elizabeth Reis. Shortly afterwards, the family moved to New Castle, Pa., where his father formed the firm of Reis, Brown & Berger, and became one of the largest manufacturers of rolled iron in the United States at that time. After receiving a common school education, Mr. Reis entered the works, which were then controlled by his brothers, and learned the trade of sheet and plate rolling and the various details of blast furnace operations. In 1886, he became vice president and general manager of the Gogebic Furnace Co., Michigan, manufacturing charcoal iron. In 1888, he was manager of the Nashville Iron, Steel & Charcoal Co., with furnaces at West Nashville, Tenn., and in 1889, went with the Tennessee Coal, Iron & Railroad Co., at Birmingham, Ala. In 1891, he became connected with the Watts Iron & Steel Syndicate, Ltd., of Middlesboro, Ky. In 1893, he went to the Oliver Iron & Steel Co., Pittsburg. At about this time, the Mesabi ores were discovered, and it was demonstrated at these works that large quantities of these fine ores could be successfully used in blast furnace operations. In 1899, at the formation of the National Steel Co., he was made general manager of all blast furnace operations of this company, which included 16 active furnaces and three building.

In 1901, at the formation of the United States Steel Corporation, the operation of the plants of the National Steel Co. was taken over by the Carnegie Steel Co., and Mr. Reis was made general superintendent of the Shenango Valley distriet, which included all blast furnaces, steel works and rolling mills at New Castle and Sharon, Pa. In 1905, he became assistant to the president of the United States Steel Corporation, and has continued in this capacity to the present date, giving his attention largely to construction work.



JOHN REIS.
Recently Elected Vice President of United States Steel Corporation.

Assistant to President.

The appointment of Ward B. Perley as assistant to the president, is also announced. Mr. Perley has been the efficient assistant to former Vice President Dickson, and has given attention to the distribution and assignment of raw and converting materials other than iron ore and fuel. His work will continue largely along these lines and those bearing upon operations.

Mr. Perley's practical experience in the iron and steel industry, has had largely to do with the manufacture of pig iron and with blast furnace practice. His first position with an iron plant was in his early youth, when, in February, 1881, he entered the employment of the Franklin Iron Works Co., Columbus, O., which operated the old Franklin furnace in that city. This furnace is now known as the No. 2 stack of the Columbus works of the Carnegie Steel Co. Several years later, the Franklin furnace passed to the control of King, Gilbert & Warner, and Mr.

Perley remained with this firm of manufacturers for 11 or 12 years, occupying various posts of responsibility. He then became associated with the Cherry Valley Iron Works, operating a blast furnace, rolling mills, coke ovens, etc., at Leetonia, O. In this connection he assisted in the active management of operations and served as director of the company. Later this plant was sold to the Republic Iron & Steel Co. When the National Steel Co. was formed in 1899, Mr. Perley was made assistant to Vice President Riley M. Gilbert, with headquarters in New York. The National Steel Co. controlled and operated what are today the Newcastle, Pa., Mingo, O., Bellaire, O., North Sharon, Pa., Columbus and the Ohio works at Youngstown, of the Carnegie Steel Co., and the isolated furnace at Zanesville, O. It was self-contained in its operations, and in its properties were embraced coal lands, coke plants and iron ore mines. In the merging of the National Steel Co. into the United States Steel Corporation, Mr. Perley became assistant to Vice President Wm. B. Dickson and has served in that capacity up to the present time. Mr. Perley is a native of Ohio, having been born in Zanesville. His residence is at Montclair, N. J.

WARD B. PERLEY.

Newly Appointed Assistant to President James Farrell, of United States Steel Corporation.

Hurd's Iron Ore Manual, which is the result of some months of work by Rukard Hurd, of St. Paul, is in the press and will be ready for distribution within two weeks. Orders placed through F. M. Catlin, sales agent, 510 Capitol Bank building, St. Paul, will be filled at the preliminary price of $5 up to June 1, after which date the regular price of $7.50 will go into effect.

The Hawley Down Draft Furnace Co., Chicago, has reduced its capital stock from $500,000 to $100,000 and the number of directors from seven to three.

TALKED CONVENTION

Arrangements at Regular Meeting of Pittsburg Foundrymen.

At the regular monthly dinner and meeting of the Pittsburg Foundrymen's Association, held at the Fort Pitt hotel, Pittsburg, Monday evening, considerable time was devoted to discussing arrangements for the annual conventions of the American Foundrymen's Association, American Brass Founders' Association and the Associated Foundry Foremen, to be held in Pittsburg during the week beginning May 22.

H. E. Field, chairman of the convention committee, stated that arrangements have been made to register 5,000 members and guests. The registration booth will be opened Monday, May 22, at 2 p. m. Mr. Field also announced that 42 papers had been collected by Secretary Richard Moldenke, of the American Foundrymen's Association, to be read at the professional sessions. One of the features of the convention this year will be a subscription dinner open to all members and guests who are registered. The dinner will be held Friday evening, but the place has not yet been selected.

President J. S. Seaman, of the Pittsburg Foundrymen's Association, appointed Joseph T. Speer, William Yeagle and C. H. Gale members of the nominating committee, to nominate officers to be elected at the June meeting, which will be the final session until next fall.

Meets in Canton

The thirty-sixth annual convention of the Amalgamated Association of Iron, Steel and Tin Workers opened at Canton, O., Tuesday morning. The wage scale committees consisting of 30 delegates convened at the Courtland hotel Saturday previously, and likely will report to the convention on Thursday. Last year the Amalgamated Association members were granted an advance of 50 cents a ton for puddling. No difficulty is expected in arranging the scale this year. President P. J. McArdle is presiding at the convention.

Arrangements are being made for the annual convention of the Sons of Vulcan, which will be held in Pittsburg in the near future.

In welfare work the United States Steel Corporation has made appropriations for installing cooling devices in the hot mills of the American Sheeet & Tin Plate Co., for the comfort of employes, especially during the summer months. A small appropriation was made for improvements at the Rankin, Pa., plant of the American Steel & Wire Co.

Personal

John D. Ryan, president of the Amalgamated Copper Co., has been elected president of the United Metals Selling Co., succeeding Adolph Lewisohn.

W. T. Hays has been appointed general superintendent of the Scullin-Gallagher Iron & Steel Co.'s plant at St. Louis, vice F. G. Dunbar resigned.

Henry Plow, assistant treasurer of the Mitchell-Lewis Motor Co., Racine, Wis., left for Europe to arrange for the establishment of a general foreign Mitchell agency.

F. G. Smith, president and general manager of the Osborn Mfg. Co., Cleveland, manufacturer of foundry supplies, etc., has left for a trip abroad. He will return about June 1.

John C. Anderson, of Westinghouse, Church, Kerr & Co., Pittsburg, has resigned to become mechanical engineer in the sales department of the Pressed Steel Car Co., with offices in New York.

S. H. Voorhees, president of the Royal Bank of Canada, has been made a member of the bondholders' committee of the Southern Iron & Steel Co., which is acting in the matter of the proposed consolidation of the company with the Alabama Consolidated Coal & Iron Co.

Frank H. Landon, formerly connected with La Belle Iron Works, at Steubenville, O., has become assistant to Philip Schaefer, assistant manager of sales of the Jones & Laughlin Steel Co., in charge of the tin plate department. Mr. Landon will be stationed at Pittsburg.

E. Sidney Lewis, formerly sales agent for the Standard Steel Works Co., Philadelphia, has been appointed special sales agent for the Pittsburg Steel Co., with headquarters in Pittsburg, to perform such duties as may be assigned to the general manager of sales.

J. E. Rawson has been appointed northern Ohio sales agent of the Braeburn Steel Co., vice William F. Bonnell, resigned. New offices have been opened at 512 Cuyahoga building, Cleveland, from which the business in Braeburn high-speed tool and other steel will be conducted.

Henry R. Cobleigh has resigned as mechanical editor of The Iron Age, which position he has held for the last seven years, to take charge of the advertising and publicity of the International Steam Pump Co., 115 Broadway, New York City. He entered upon his new duties May 1.

After spending 25 years in Milwaukee, first with the E. P. Allis Co., and later with Allis-Chalmers Co., its successor, Sol Shaw has severed his connection with the Reliance works and will become identified with the No. 2 plant of Allis-Chalmers Co., at Chicago. Mr. Shaw was for several years president of the Milwaukee Foundry Foremen's Association, and was one of the pioneers in the manufacture of soft crucible steel castings.

John C. Mengler, master mechanic of the Pennsylvania Railroad Co. shops, West Philadelphia, has been appointed master mechanic of the Altoona, Pa., machine shops, succeeding I. B. Thomas, promoted to superintendent of motive power of the Northern Central railroad. Mr. Thomas succeeds J. T. Wallis, recently promoted to superintendent of motive power of the West Jersey & Seashore railroad.

Death of Capt. Joseph E. Johnson, Sr.

Capt Joseph E. Johnson Sr., one of the oldest and best known blast furnace managers of the Virginia district, died unexpectedly at Longdale, Va., April 30, from an attack of heart trouble. For 41 years, during the greater part of which he was general manager of the company's coke and blast furnace properties, Capt. Johnson was connected with the Longdale Iron Co. His ability and skill as a furnace operator in connection with his tactful and resourceful management of labor and the other problems characteristic of southern manufacture, made him prominently identified with the historic career of his company. Under his supervision, the first basic pig iron for merchant consumption to be made in this country and the first set of chills used in this connection was manufactured at the Longdale plant in the late 80's. Capt. Johnson was born in Bryn Mawr, Pa., 68 years ago, and when a mere youth enlisted on the side of the north in the civil war. He had an honorable and distinguished war career, was wounded in battle, and at the end held the rank of captain. He settled in Virginia and entered the lumber business. In this way, through the selling of material to the owners of the Lucy Selina charcoal furnace, the original stack of the present Longdale plant, Captain Johnson came in contact with the furnace owners, who were favorably impressed with his business ability. The result was that about 1870 he entered the employ of the Longdale company, and several years later was made its general manager. He served constantly in this capacity until about a year and a half ago, when he was granted a leave of absence for a trip abroad, taken for the benefit of his wife's health. He had only just returned from this trip when stricken.

John C. Quinn, aged 24, manager of the Braddock, Pa., plant of the Singer Mfg. Co., died April 30 at the family residence; Pittsburg.

John Wild McKay, associated with the Standard Roller Bearing Co., of Philadelphia, died in that city, April 24. Until the first of this year, he was secretary of the Wetherill Finished Castings Co., Philadelphia.

William H. Paxton, treasurer of the Canonsburg Iron & Steel Co., and president of the First National bank of Canonsburg, Pa., died in that town April 28, aged 65. He was identified with various enterprises in Canonsburg.

Capt. Thomas Lawson, president of the King-Lawson Car Co., New York city and Middletown, Pa., died at New York city, April 25, aged 72. For 40 years before he engaged in manufacturing dump cars he was a steamboat captain on the Hudson river.

James J. Carry, a pioneer railroad builder and steel maker, died in Chicago at his home, 6240 Woodlawn avenue, April 24. Mr. Carry was the founder of the Waugh Draft Gear Co., Chicago. He was born in Ireland 65 years ago. For a number of years, Mr. Carry had been engaged in railroad construction. He was also heavily interested in a number of iron and steel working concerns.

Lewis F. Grammes, a prominent machinery manufacturer of Allentown, Pa., died April 26, aged 67. He was possessed of a high mechanical skill and was the inventor of numerous machines of various types. Mr. Grammes was particularly interested in the export trade and his firm, L. F. Grammes & Son, enjoyed a heavy foreign patronage. He was one of the principal organizers of the Philadelphia Export Exposition ten years ago.

Report of Works Sale.—The sale of the Risdon Iron & Locomotive Works, San Francisco, to the United States Steel Corporation, has been reported in that city, but official confirmation of the sale is lacking. The works are located at Potrero, Cal. The Risdon works are largely a ship building plant, but it also makes forgings, riveted pipe nuts and bolts.

The Manufacture of Tubes and Their Treatment

Development of the Locomotive Boiler Tube—Severe Compression and Flanging Tests of the Tube Crop Ends

At a meeting of the Railway Club of Pittsburg, held in that city, Friday, April 28, F. N. Speller, metallurgical engineer of the National Tube Co., read the following paper, entitled "The Development of Locomotive Tubes and Their Treatment":

"The tube industry owes much to the railroads for its developments; in fact, the invention of lap-welding may be traced to the necessity which arose from the building of George Stevenson's first locomotive for a tube which would be safer and stronger than the butt-welded tube, the only one made at that time. Since Stevenson's day, the manufacture of locomotive tubes has increased in quantity and quality as the demands of railroad service became more exacting and the whole tubular industry was no doubt favorably affected thereby. Seamless steel tubes were introduced in about 1880 and established a new standard of strength and ductility and endurance under many conditions of service. Later, a satisfactory grade of soft steel was produced, which could be lap-welded like charcoal iron and this also has been much improved, so that we now have practically three classes of tubes for locomotive service—charcoal iron (lap-welded), steel (lap-welded), and seamless steel.

"When we speak of steel in this paper, it refers more to the method of manufacture than the finished product, as the steel used in the manufacture of tubes, as a matter of fact, is a purer form of iron than that made by the charcoal process, and like the older metal, cannot be tempered.

"A special grade of Bessemer steel was at first used in the manufacture of lap-welded tubes, on account of its superior welding quality, but later had to be abandoned, as under some conditions it was found to develop brittleness in the bends after the tubes had been in service some time. The substitution of basic open-hearth steel, low in carbon and with less than 0.05 per cent phosphorus and sulphur has been found, after more than two years' trial, to entirely do away with any tendency of this kind, and, as now made, there is little difficulty in securing a strong weld with this steel. Seamless lap-welded steel tubes are now made from practically the same grade of soft basic open-hearth steel.

"Let us then take up what seem to be the main points requiring attention in the locomotive tube in order that it may give the best service under modern conditions.

"The manufacturer should furnish a tube in the best possible condition to withstand corrosion and pitting, that is, the metal should be as uniform in composition and density as it is possible to make it. Much can be done to lessen the tendency to pitting by proper attention to the making of steel and the way it is worked. We have been working on this problem for several years and have gone to considerable trouble in the matter of testing and inspection of material, and in the process used for manipulating the steel, so as to produce a tube which will resist corrosion as well as iron can be made to do so, and judging from the reports of comparative service tests which have been received, steel so made is, in this respect, at least the equal of the best charcoal iron.

"After all, however, the solution of this problem is largely in the hands of the user. Iron or steel will corrode in spite of anything that can be done if certain material is in solution in the water, particularly dissolved oxygen or carbonic acid. By the removal of these harmful agencies, corrosion may be reduced to practically nothing. It is generally understood, nowadays, that water conditions have everything to do with corrosion, and the simplest solution of the problem is to treat the water with the object of making it as harmless as possible.

"The construction and handling of the engine has so much to do with the trouble experienced from leaky flues that it is difficult to determine how much, if any, of the responsibility for this should be placed on the tube material. If railroad engineers will tell us what qualities are required in the tube to make it hold tight in the flue sheet, we will be glad to follow their suggestions as closely as possible. At the present time, the steel tube is made as stiff as possible, consistent with the best welding quality and ability to stand up successfully under expansion and beading in the tube sheet.

"The tube should be of such quality as to stand repeated tightening in the flue sheet without cracking or showing undue evidence of fatigue, nor should

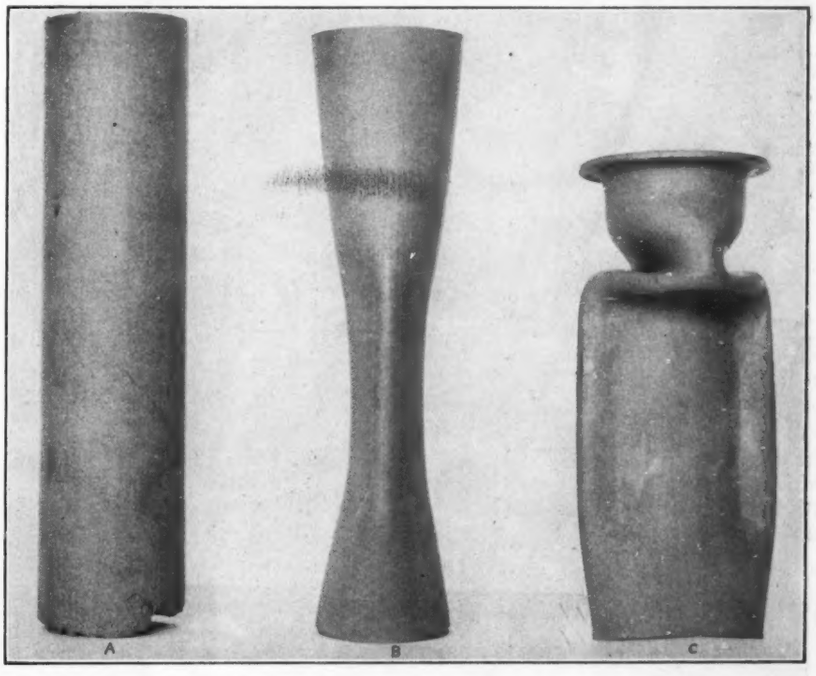


FIG. 1—TESTS TO WHICH CROP ENDS OF LAP-WELDED STEEL BOILER TUBES ARE SUBJECTED

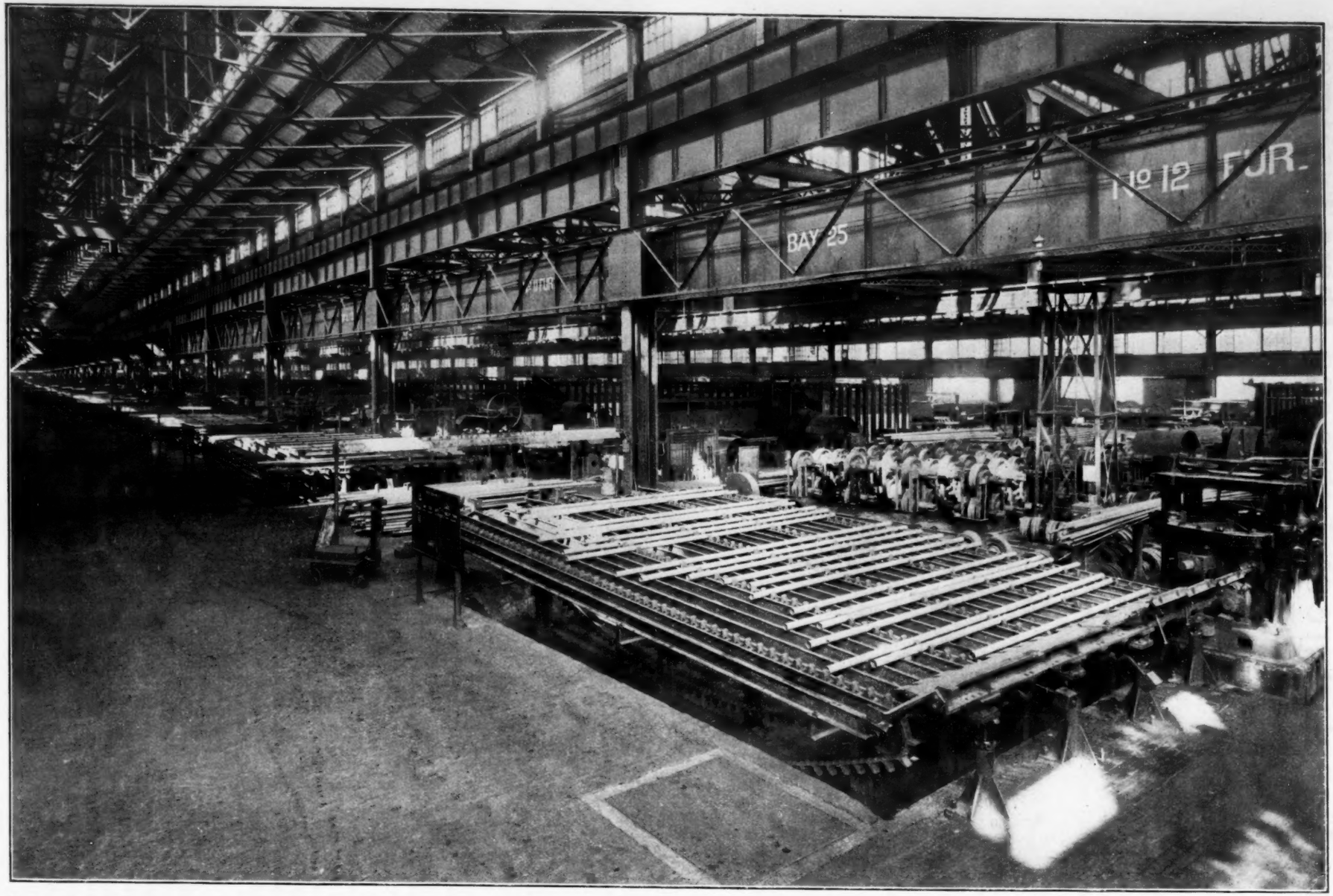


FIG. 2—BOILER TUBE COOLING TABLE AND A PARTIAL VIEW OF THE LAP WELD BOILER TUBE FURNACES IN THE NATIONAL PLANT OF THE NATIONAL TUBE CO., MCKEESPORT, PA.

these weaknesses develop during the life of the flue in service. The material found best adapted to give these properties is a special grade of soft open-hearth steel, carrying not over 0.05 per cent phosphorus or sulphur.

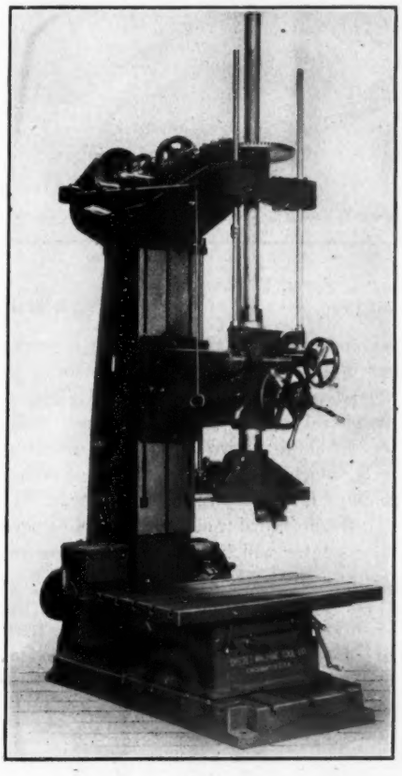
Weldability.

"The quality of the metal and method of handling are equally important in safe ending. Soft steel has been found somewhat harder to weld than charcoal iron, but it has been greatly improved in this respect. The necessity for a good welding quality steel is of first consideration in making locomotive tubes so that they may be easily safe ended, and this point has received a great deal of study, especially in the manufacture of lap-welded tubes, where it is, of course, one of the first essentials to manufacture. Charcoal iron carries more impurities than soft open-hearth steel, and these impurities form a self-fluxing mixture which facilitates welding. Railroad specifications have been so tightly drawn on composition in some cases as to work against the production of a good quality of steel for locomotive boiler tubes by calling for unnecessarily low phosphorus and sulphur. There is very good reason to believe that a mistake has been made in this direction and that the general welding quality of the steel would be much improved, and the steel at the same time would lose nothing in other respects, if the maximum phosphorus and sulphur limits were both raised to 0.05 per cent. With producer gas, now generally used of necessity, it is a very difficult matter to keep the average sulphur in the heat below 0.035 per cent, and in order to remove this sulphur in the open-hearth furnace, the steel has to be held and worked in such a way as to frequently leave it dry and difficult to weld.

Welding Steel.

"Before the steel can be welded in practice, a fluid cinder must be formed on the surfaces which are to be united. If the metal is heated too far above the point at which this cinder should flow, it will be burned and destroyed. We endeavor to have the range of temperature between the cinder-forming and burning points in the steel as wide as possible, so as to assist in lap-welding and give the largest margin of safety in safe ending. Considering the variety of the requirements, it seems to us that the composition of the metal should be left largely to the discretion of the manufacturer so far as is consistent with a certain specified standard of physical quality in the finished tube. We frequently go to the trouble of re-phosphorizing for the purpose of improving the fluxing and welding quality of our steel.

"There are a few broad principles on the heat treatment of tube steel which should be taken into consideration. The preliminary heating of the body tube preparatory to flaring out the end should be carried to a bright orange color—1,750 degrees Fahr. In the case of steel on steel, if the body tube is allowed to cool black after heating to this temperature and inserting the safe end, the grain structure will be refined and the metal put in much better condition for the welding operation, which follows. Moreover, if the preheated body tube is returned to the furnace without cooling, the metal may be crystallized or burned before the safe end has been heated hot enough to weld. Should there be any considerable difference in thickness between the safe end and body tube, it is evident that there is again a risk of overheating the one before the other is sufficiently heated to weld.



Boring, Drilling and Tapping Machine

Uniformity of Material.

"This is a quality which the tubes should possess in a high degree, both as to physical and chemical properties. There is no difficulty as to the average steel tube, nowadays, withstanding the master mechanics' tests, made on one sample out of each hundred tubes. We have, however, recently designed a machine to make the flange, crushing down, and flattening test on each end of every tube in the manner shown in Fig. 1. This gives assurance both as to the character of the metal in each individual tube and also, in the case of lap-welded tubes, as to the welding quality being satisfactory. Steel tubes are now made in one grade of material suitable for either body tube or safe-ending."

In Fig. 1, at *A*, is shown one of the crop ends, cut from each end of every lap-welded steel boiler tube for test purposes by the National Tube Co. The crop end laterally compressed in a testing machine is shown at *B*, and at *C* the same tube has been compressed vertically with a flange turned on the top. Every lap-welded steel boiler tube receives this test on one piece cut from each end, each tube thus being subjected to two tests. This test is entirely apart from the hydraulic, inspection and other tests made. In Fig. 2 is shown a section of the National Tube Co.'s National Works at McKeesport, Pa. This illustrates the boiler tube cooling tables and gives a partial view of a large number of lap-weld boiler tube furnaces. This department is located in what is said to be the largest structural steel mill building in the world.

Boring, Drilling and Tapping Machine

In the accompanying illustration is shown a boring, drilling and tapping machine, built by the Dreses Machine Tool Co., Cincinnati. It is intended for heavy drilling, tapping and cutting holes in steel plates, bars or connecting rods and for boring and facing such pieces that cannot be conveniently set on a revolving table machine or which require too much swing for a boring mill. The driving mechanism is similar to that of an upright drill, but is provided with a frictional starting, stopping and reversing device which is actuated by a looped handle which is always within easy reach of the operator. The horizontal bar, to which the fork and friction clutch arrangement is attached, is balanced and spring dowel-pinned so that it cannot engage by itself. The back gears are operated by steel clutches which are engaged or disengaged by the vertical lever shown at the left. The left hand feed rod insures four different feeds for ordinary drilling and boring, while the right hand feed rod provides for leads equal to standard pipe threads. The nose of the spindle is provided with a facing head operated by a

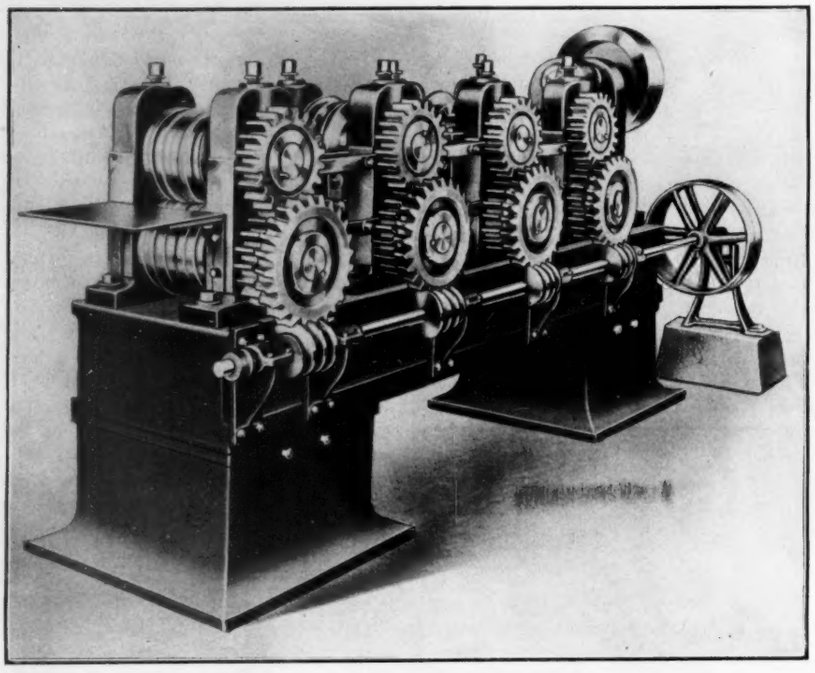


FIG. 1—MACHINE FOR ROLLING STEEL STUDDING

star feed. The spindle and spindle head are counterbalanced by a weight inside of the column. The table is of the compound type, having a longitudinal movement of 40 inches and a traverse movement of 8 inches. The machine is motor-driven by a multiphase, constant speed, 12-horsepower motor. The machine complete weighs 12,000 pounds.

Machine for Rolling Steel Studding

In Fig. 1 is shown a machine, built by the Wire Specialty Works, Chicago, for rolling steel studding for plaster board partitions. A section of the studding manufactured on this machine is shown in Fig. 2. The machine consists of four sets of rolls which are driven from a single shaft through worm gearing, as shown in Fig. 1. The rolls are 12 inches in diameter and have a peripheral speed of 50 feet per minute. The first two trains are roughing rolls which form the studding approximately into the required shape. Between the third and fourth trains are steel guides which make the Z-shape and lead the material properly into the final train of rolls. The rolls deliver the studding over a mandrel at the back of the machine. As the material passes over the mandrel it is straightened by blows from a light swaging hammer.

The studding is made from 21-gage sheets which are previously perforated in a power press. The machine is 9 feet long, 3½ feet wide and weighs 10,000 pounds. It is driven by a 20-horsepower motor and produces 25,000 lineal feet of finished product per day.

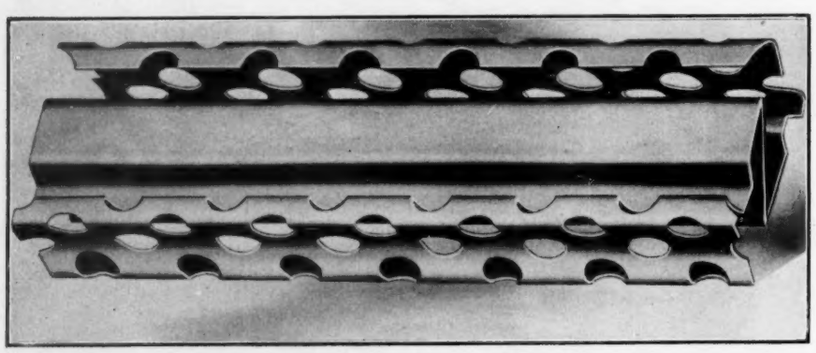
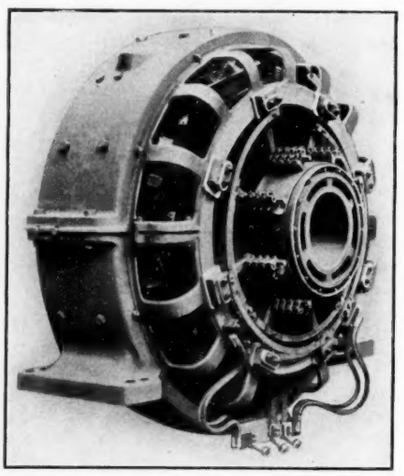


FIG. 2—STEEL STUDDING FOR PLASTER BOARD PARTITIONS

Direct Current, Interpole Generator

In the accompanying illustration is shown an engine-driven, direct-current, interpole generator, built by the Westinghouse Electric & Mfg. Co., Pittsburg. The interpole construction provides perfect commutation with a definite brush position covering all ranges of load. Heavy overloads may be imposed without sparking or flashing and wear on commutators and brushes is reduced to a minimum. The ventilation of all current-carrying parts and of the armature cores of this line of generators is such that there can be no hot spots at points dangerous to the insulation. The frames are made of cast steel of high magnetic permeability. The rotors or armatures are designed for direct-mounting on the shaft of the prime mover, which may be of any type of suitable speed. The stators or fields



ENGINE-DRIVEN, DIRECT-CURRENT INTERPOLE GENERATOR

are arranged for mounting on masonry foundations or directly on the bed plate of the prime mover.

Ventilation has received careful consideration in the design of these generators. The windings are designed to give shallow coils with the result that the heat in every part has only a very short distance to travel to the surface from which it is radiated. These generators are standardized for the usual ratings from 25 kilowatts to 1,000 kilowatts with speeds conforming to the best engine practice. Up to 100 kilowatts the standard voltages are 125 or 250 and from 100 kilowatts to 300 kilowatts these machines are wound for 125, 250 or 600 volts and from 300 kilo-

watts to 1,000 kilowatts they are wound for 250 and 600 volts.

In these generators the proper conditions for commutation are obtained by the use of small poles interspaced between the main poles. The interpoles have their windings in series with the armature and set up a magnetic field which counteracts the effect of the field formed by armature magnetization. Since the interpole coils are in series with the armature the interpole field strength varies in proportion to the load and it thus has the proper corrective effect at all loads. The correct position of the brushes must be determined accurately before the generator is put in service and when this point has been properly located, shifting the brush position is not only unnecessary, but detrimental. With the development of this interpole principle, experience has proven that sparkless commutation is obtained under practically all conditions from no load to very heavy overloads.

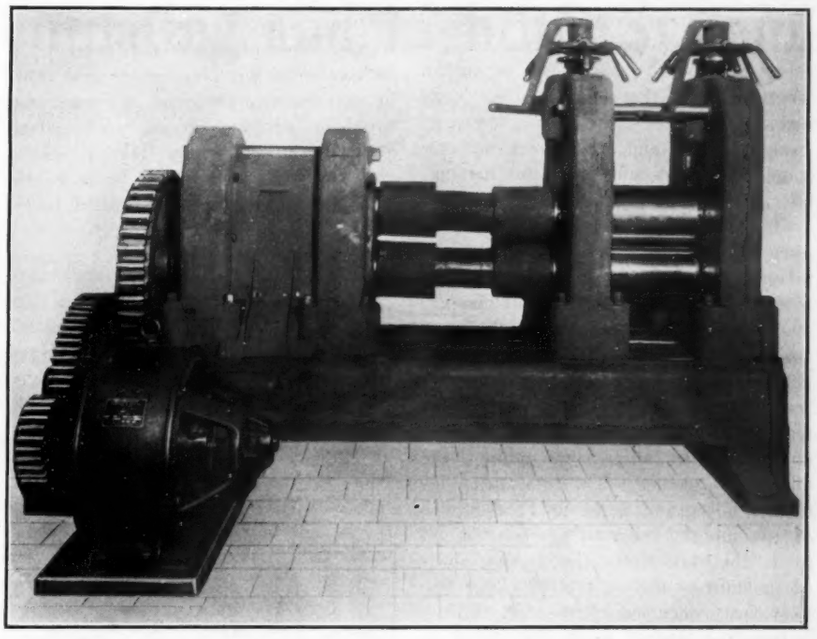
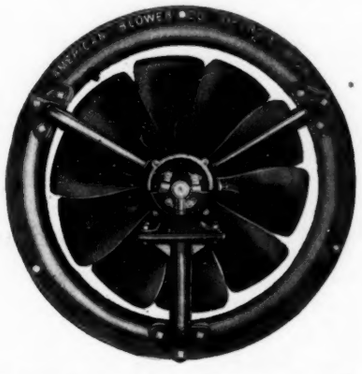


FIG. 1—MOTOR-DRIVEN ROLLING MILL



CURVED BLADE, DISC VENTILATING FAN

Ventilating Fan

A curved blade, disc ventilating fan, manufactured by the American Blower Co., Detroit, is shown in the accompanying illustration. This fan is provided with ten broad blades, properly curved to produce large volumes of air freely or to operate against pressures. The air current as it leaves the fan is directed straight ahead from the blades and has a tendency to turn inward for a considerable distance before it begins to expand. As an illustration of this feature, one of these fans can be placed at a distance of 16 inches away from an opening in a box and it will discharge more air on the other side of the opening than the fan itself handles. This is due to the siphon action of the air as it passes through the opening in the box, thus drawing in air along the face of the box. It is claimed this type of fan operates at a mechanical efficiency of 64 per cent.

Mill for Rolling Sheets

A mill for rolling sheet steel, sheet copper, zinc, German silver, nickel, platinum, etc., direct connected to a motor and built by the Standard Machinery Co., Providence R. I., is shown in the accompanying illustrations. The roll housings are of the square section type and the machine is fitted with rolls, 12 inches in diameter and 20 inches face. The upper boxes are supported by side yokes which straddle the adjusting screws and which are connected to the boxes by straight rods for lifting purposes. On top of each upper box is a hardened tool steel thrust washer which takes the

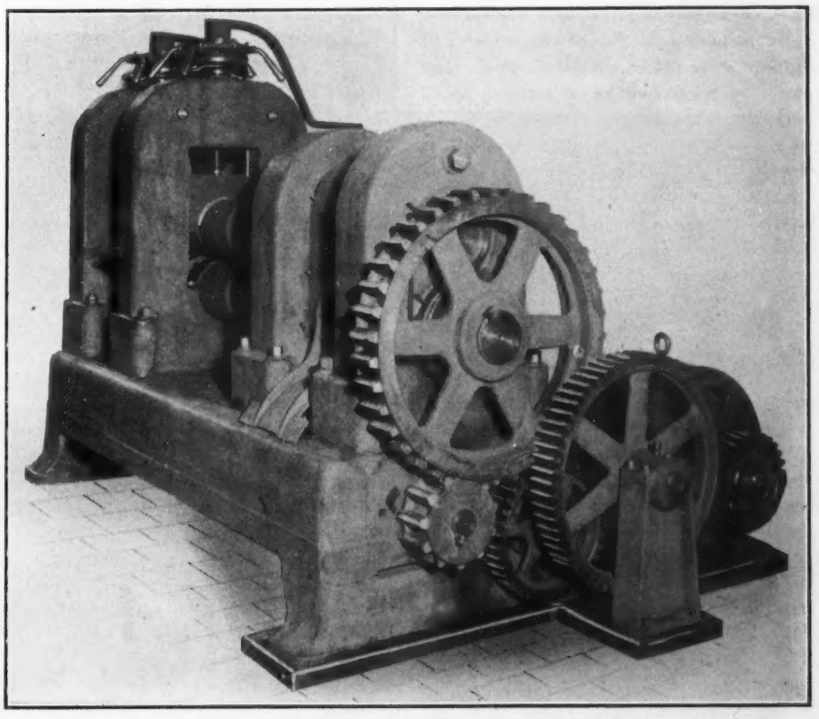


FIG. 2—END-VIEW OF ROLLING MILL, SHOWING MOTOR AND DRIVING GEARS

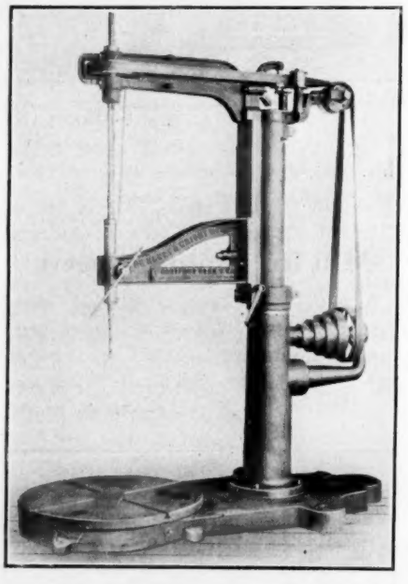
thrust of the screw. The roll housing is set on the bed with T-bolts and T-slots in the bed permit the use of different lengths of rolls. The maximum length of roll that can be used is 22 inches. The rolls are driven by cast steel wabblers and cast steel wabbler couplings direct-connected to herringbone pinion shafts in the gear housings.

The herringbone pinions are 13 inches pitch diameter and 14 inches face, each pinion being 7 inches face, and they are made right and left. The pinions are made of forged steel, the teeth being cut. Exclusive of both motor drive and herringbone pinions, the mill is triple-trained and when the motor gear and pinion are included it is four-trained and with the herringbone pinions the mill is five-trained. The total ratio, including all gears, is 84 to 1; the ratio of the motor pinion to the gear is 2.4 to 1; the ratio from the driving shaft of the mill to the rolls is 35 to 1. The floor space occupied by the mill is 15 x 8 feet, the overall height is 8 feet, 6 inches, and the mill is driven by a 50-horsepower, direct current motor at a speed of 1,000 revolutions per minute. The roll journals are 9 inches in diameter and 9 inches long. The length of the bed of the mill is 10 feet, 2 inches. The main driving gear on the gear housings is shrouded gun iron and the pinion meshing into this is made of the same material. The other two trains of gearing contained in the mill proper have cut teeth and are made of cast steel. The gear is supported by outboard bearings and the rear end of the mill, including outboard bearings and the motor, is placed on a bed plate. The motor is controlled by a variable speed device which permits of different speeds while rolling. The adjustment is controlled by a spanner arrangement and for heavy strains, by off-set wrenches which are built down to the height of a man's shoulder. The adjusting screws are fitted with micrometer adjustment. The total weight of the machine, including bed plate with motor, is 27,500 pounds. The machine is fitted either with friction clutch drive, chain drive or direct gear drive. When fitted with roller bearings on the roll journals the necks of the rolls and the body are chilled. When equipped with roller bearings the gear ratio of the mill is reduced to 24 to 1, exclusive of the motor gear drive. It is customary to equip the mill with chilled iron rolls, although hardened and ground steel rolls can be furnished.

The variable speed arrangement is an important feature of this mill. The change of speed is accomplished by the use of a variable speed controller hung in a panel at the side of the mill. The herringbone pinion gears insure the uniform rolling of stock and prevent the formation of wrinkles, waves and other imperfections caused by an inaccurate speed or jumping on the roll surface. When back lash in the gearing, strains or motor disarrangements occur in the back gears, these are transmitted to the herringbone pinion gears which in turn act as compensators and do not transmit such unevenness to the rolls.

High Speed Radial Drilling Machine

In the accompanying illustration is shown a high speed radial drilling machine which is especially designed to drive drills that depend more on speed than feed for efficiency. It has been found that for drilling ½ inch and less, power can be more efficiently used by dividing it so that the greater portion is utilized in the form of speed and the smaller portion of the power in the form of feed. The predominant use of power for speed is greatest in driving the smallest drills and gradually decreases as ½ inch is approached, when a point is reached where power must be divided equally in the form of speed and feed to obtain the highest efficiency. From this point power must be used in an increasingly greater proportion in the form of feed and a correspondingly smaller proportion in the form of speed, therefore, machines for driving drills from ½ inch upward, must be built heavier and more rigid than those designed for driving lighter drills.



HIGH SPEED RADIAL DRILLING MACHINE

The radial drilling machine shown herewith, built by the Henry & Wright Mfg. Co., Hartford, Conn., is particularly adapted for driving the smaller sizes of drills. The arm overhang is 30 inches, but the table, which revolves on ball bearings, permits the operator to reach a point 60 inches away from the column by merely revolving it with the foot. The machine is driven by a 2-inch belt which will transmit sufficient power to drive drills up to 1⅛ inches. This radial machine has eight speeds and may be used to tap up to ½ inch. It is equipped with ball bearings throughout, including the swinging column and both the column and table are equipped with locking screws so that they may be set in the position desired. The spindle drive is actuated from underneath the pulley instead of on top which permits the use of a shorter and stiffer spindle and the spindle pulley is enclosed by a bracket so as to eliminate, as far as possible, any belt strains, but a rotary one, from being transmitted to the spindle. This machine is especially adapted for drilling bulky sections with the smaller sizes of drills and the crossing of the arm with the circle of the table enables the operator to promptly find any drilling position.

Understanding of Foreign Trade

W. C. Redfield, vice president of the American Blower Co., who is now on a trip around the world to study the markets with a view to increasing the export business of the American Blower Co., in a letter from Calcutta, India, gives pertinent suggestions to American manufacturers who are interested in foreign trade. Regarding the mailing of letters, he said bitter complaint is made that American houses trust only young irresponsible boys to do their mailing instead of having some clerk of fair responsibility attend to this important service. "The result is misaddressed letters," he added, "and the habitual neglect to prepay postage, causing extra charges. What I find chiefly needed to greatly enhance our export trade in America is knowledge of geography, of the peoples, their ways and needs and their business methods. Foreign trade does not essentially differ in its basis from domestic trade. A man selling in Michigan studies Michigan needs, offers the trade what it wants and describes his product in a way the people of Michigan will understand. A man in larger trade does not assume that Texas and Florida use the same goods that sell in Maine."

Shop Heating, Ventilating and Lighting System

How the Hisey-Wolff Machine Co., Cincinnati, Increased the Efficiency of its Operating Force 25 Per Cent

The importance of having proper ventilation, good light and uniform temperature at all times, in shop and factory buildings is now generally recognized by the progressive manufacturer. In the new plant of the Hisey-Wolff Machine Co., Cincinnati, particular attention has been given to the heating and ventilating of the shop. As a result, in the new plant, with practically the same men and machine equipment, 25 per cent more work is turned out than in the former shop where the lighting and ventilating facilities were poor. This concern manufactures electric drills in sizes from ¼ to 2 inches, and electric grinders for all purposes from ¼ to 3 horsepower.

The shop building is two stories high, 75 feet wide, 168 feet long on one side and 194 feet long on the other. On the first floor is the machine shop, heating and power plants, toilet rooms and tool rooms. All assembling and testing is done on the second floor. The outside walls are 17 inches thick, built of brick and faced with stone trimmings. The floor of the machine department is built of 8 inches of solid concrete, on which are placed stringers 4 inches thick concreted in to a depth of 3½ inches. On these stringers is laid a ⅞-inch maple floor. The second floor consists of a 2½-inch pine floor, covered with two layers of building paper and a ⅞-inch maple covering placed at a 45-degree angle with the length of the building. This floor is laid on 12 x 18-inch wooden girders supported by I-beams running crosswise of the building, and 8-inch hollow cast iron metal columns spaced on even centers in two rows under the I-beam girders.

In the machine department on the first floor all the machine work is done on one side of the shop and the bench work on the opposite side. The windows are placed high in the walls, the bottom of the sash being nearly 6 feet from the floor. Metallic sash windows, manufactured by the Detroit Steel Products Co., Detroit, are used throughout. Two special ventilating sashes are in each window. For artificial lighting, 26 Cooper-Hewitt mercury arc lamps are suspended from the ceiling, and are provided with semi-circular metallic shade reflectors. With this lighting arrangement there is no shading in any part of the shop either by day or night, and the eyes of the workmen are protected from injury or glare when doing the finest kind of machine work.

For heating factory buildings three general systems, hot air, hot water and steam, with their various combinations, are used. In this plant a hot air blower system was installed to utilize the heat in the waste water used for cooling the gas engine cylinders of the main power unit. Although natural gas and gas engines are used for heat and power in many Cincinnati shops, this is the first installation in which the two are combined in this way. An 85-horsepower, two-cylinder, governor-regulated engine, built by the Miller Improved Gas Engine Co., Springfield, O., using natural gas direct from the city mains, is direct-belted to a 50-kilowatt, Jantz-Leist direct current generator, which supplies the shop with power.

The cooling water is forced through the cylinder jackets by a Buffalo Steam Pump Co., 1½-inch centrifugal pump, direct-connected to a 1-horsepower direct current motor. The pump discharge is dropped under the floor with 1-inch branches to the engine cylinders. From the jackets the cooling water is taken up through 1½-inch pipes through the ceiling to the blast coils on the second floor, shown at *A*, Fig. 2. The blast coils are arranged in five groups of 18 sections each, and are spaced 5¾-inch centers.

On the second floor, leading from the blast coils, is an air duct connecting into a 72-inch, double outlet, steel plate

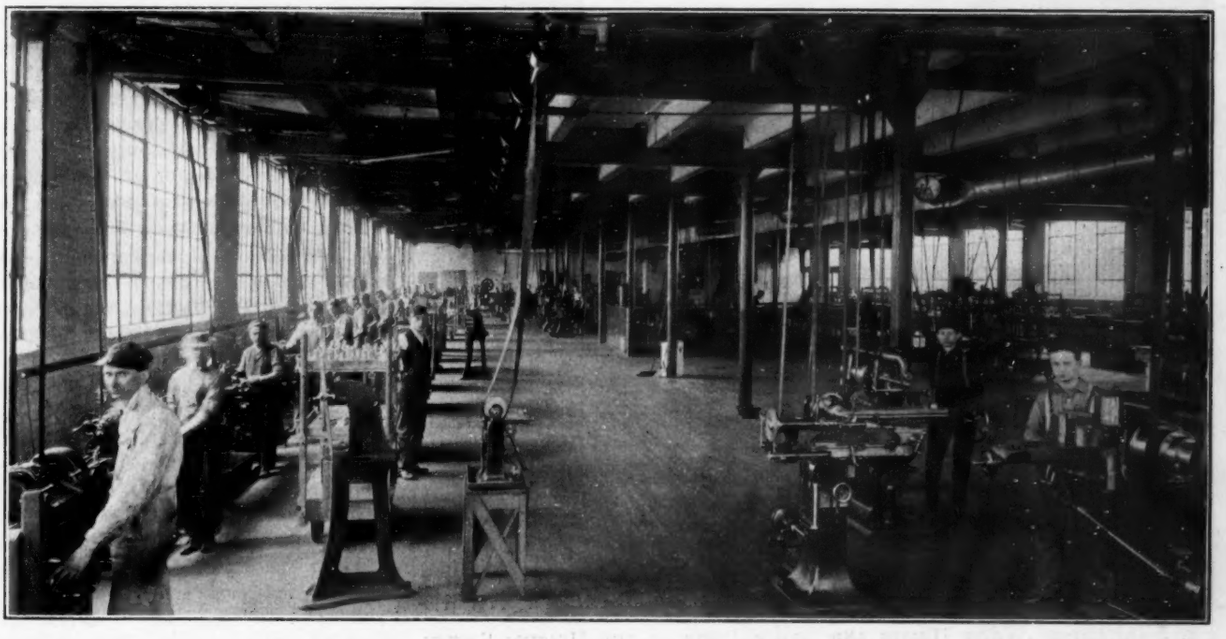


FIG. 1—A SECTION OF THE MACHINE DEPARTMENT OF THE HISEY-WOLFF MACHINE CO.'S PLANT

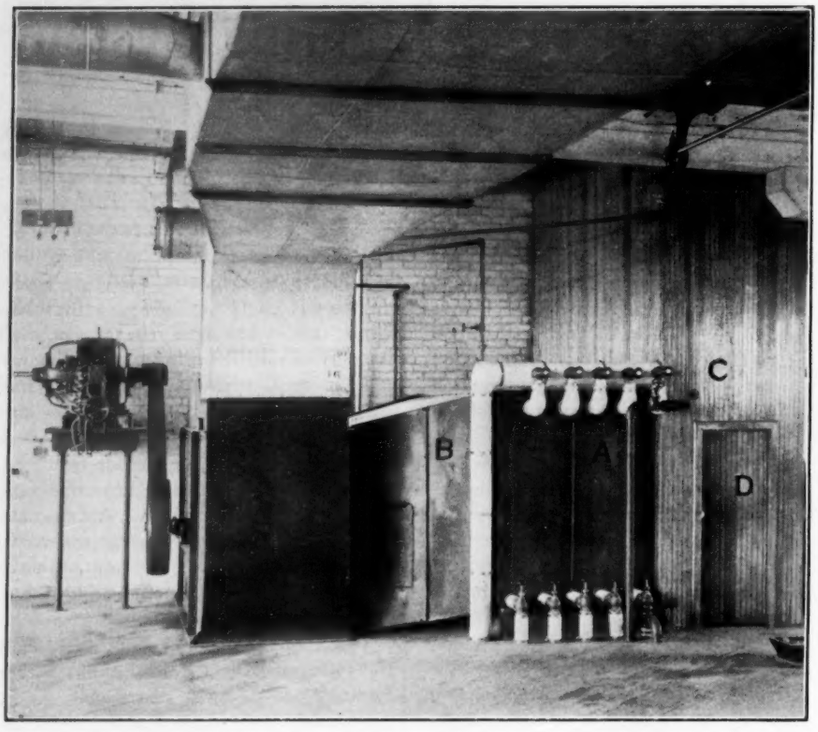


FIG. 2—LOCATION OF HOT BLAST COILS OF HEATING SYSTEM, SHOWING RE-CIRCULATING AIR INTAKE

fan, motor-driven by a 10-horsepower variable speed motor running at a constant speed. The fan is 39½ inches wide at the intake and 29½ inches at the periphery. On the other side of the blast coils at *C*, Fig. 2, is a cold air shaft, 36 inches square, leading through the ceiling to the first floor, where it terminates in a 24 x 54-inch opening. The door, *D*, in the shaft on the second floor, and the duct, *E*, on the first floor, Fig. 3, takes the cold air from the floors. In the rear of the cold air duct is a 3 x 6-foot fresh air opening connecting the wall of the engine room with the outer air.

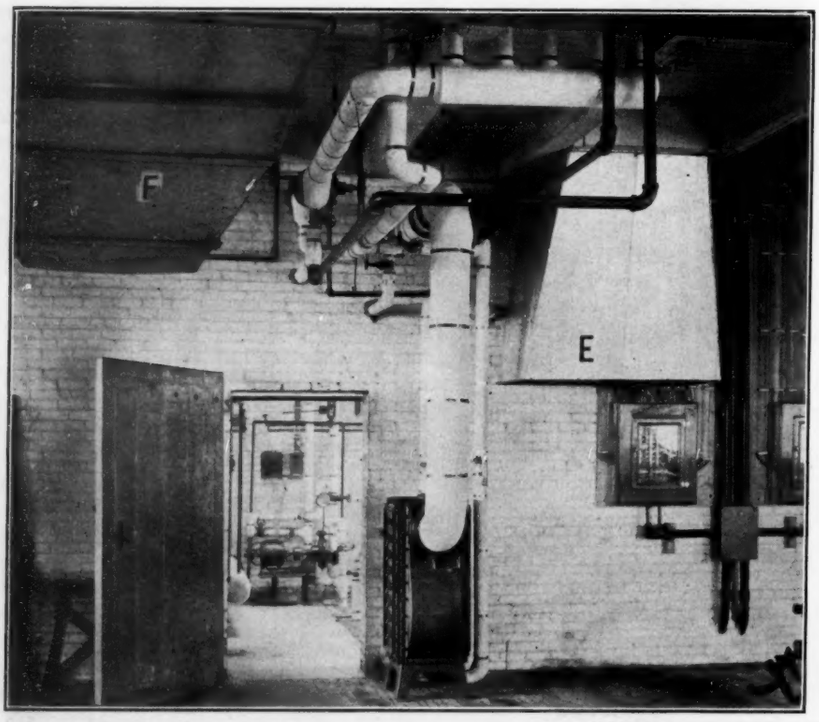


FIG. 3—AUXILIARY WATER HEATER AND OTHER PARTS OF THE HEATING SYSTEM

To distribute the hot air over the floors, two galvanized hot air conduits, as shown at *F*, Fig. 3, are suspended from the ceiling over the entire length of the building. These conduits are made of galvanized sheet steel and are 20 inches deep. They are 66 inches wide at the fan and blast coils, and are reduced in size at each outlet until the main is 22 inches wide and 20 inches deep at the extreme end of the shop where they branch into two 16-inch and one 17-inch, circular ducts. The outlet ducts increase in size from 12 to 17 inches in diameter as the distance from the blast coils increases.

A hot water furnace has also been installed and the heating equipment is so arranged that either the jacket exhaust water, or the furnace can be used alone, or the two can be used in series, to heat the buildings. A by-pass on the exhaust line is used in summer when no heat is required. A 20 x 60-inch steel expansion tank and overflow trap controls the circulation.

A temperature of 72 degrees Fahr. is maintained in the offices and 60 degrees in the shop, while the jacket water leaving the cylinders has a temperature of about 140 degrees Fahr. Tests made on the exhaust water give a difference of approximately 10 degrees Fahr. between the inlet and outlet temperatures of the exhaust water in the cylinders. This temperature is practically constant and is automatically controlled by a regulating thermostat. The shop temperature is controlled by cutting in or out, one or more of the blast coils in series, and by closing or opening the air ducts in the distributing hot air mains. Tests made on the system during six weeks of the coldest weather in winter show a total cost of $57 for gas for supplying 50 to 80 horsepower daily and for heating the entire shop comfortably.

In connection with the attention given to the proper heating and ventilation of the plant, an effort was made to reduce the time wasted in the shop to a minimum. The tool room is placed in the center of the machine department, so that it is practically an equal distance from all machine operators. Portable truck benches carrying the parts as they come through, are used throughout the shop, each operator and bench man having one for his own work. All work remains on these trucks as it goes through the shop and the trucks are placed directly opposite or behind the machine operator.

Slag-Handling Plant

Confronted with the problem of handling large quantities of lead slag and other waste material in a rapid and economical manner, the Belbach Smelting & Refining Co. has found the solution in the installation of an interesting conveying plant at its works, located on Newark Bay, N. J. After the smelting plant at this location had been in operation for some time, it was decided that more meadow-land in its vicinity should be filled-in to provide for future building sites. An abundance of material for filling was at hand in the form of ore, slag and other waste, which it was necessary to dispose of constantly at the various plants of this company. At first the slag was dumped on scows and towed to the Newark site. Here the scows were moored in a slip and wagons were filled by hand.

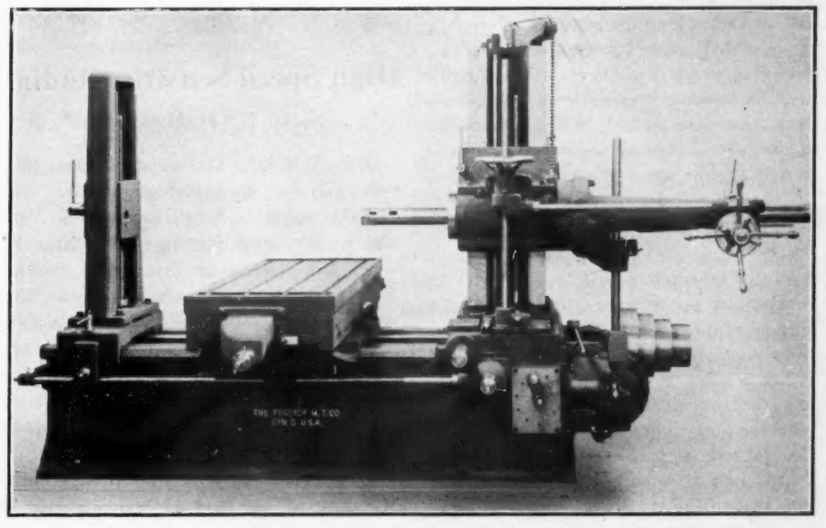
An unloading plant was erected which consists of a mast and gaff rig which operates a clam shell bucket with an ore bowl of 1⅝ cubic yards capacity, which dumps into a hopper. This plant was furnished by the Hayward Co., 50 Church street, New York. The plant has proved both economical and speedy. Only an engineer and a boatman are employed and a speed of two loads a minute has been attained.

The bucket, illustrated herewith, is operated by a rope passing around the large power wheel. The pull upon this rope closes the blades and, as the hoisting continues, the bucket is raised, and by means of the automatic swing, it is quickly carried to a position over the hoppers, where it discharges. The radius of the swing is 30 feet. The mouth of the hopper is 24 feet square and it has a capacity of 300 to 400 cubic feet. The clearance for the wagons is 11 feet. The automatic movement of the gaff is controlled by two lines. These ropes pass over the sheaves at the peak of the gaff and then to two sheaves on the cross tree arm at an equal distance from the mast, which is 32 feet high. This spread of the mast in connection with their loads is the fundamental principle of the automatic swing. To place a loaded bucket over the hopper, the closing line takes most of the load from the time it digs until the bucket opens into the hopper. To return the bucket over the scow, the holding line fastened to the head of the bucket takes the load. A winch head moves the scow under the bucket. The builders do not recommend the clam shell bucket for iron ore as its physical condition is not as favorable for rapid handling as the lead slag.

BUCKET FOR HANDLING LEAD SLAG

Extended Traverse Boring Mill

The Fosdick Machine Tool Co., Cincinnati, has designed a special, horizontal boring, milling and drilling machine with an extended traverse and long bed, as illustrated herewith. It is built for use under severe conditions for long work and heavy service. The feature of the machine is the 63-inch table, which is of heavy, ribbed construction. The table, when fully extended, has a drop of only 0.002 inch, though an allowance of 0.008 inch was made in the specifications. To carry the 63-inch table, a saddle of special, ribbed truss construction is used. The ways are heavily ribbed from end to end of the saddle to support the table overhang, which brings the table up an inch higher than the ordinary table. The saddle is 65 inches long, 26 inches wide and 6 inches deep. The heads of the saddle have a spread of 20 inches. A 3½-inch side rib on both heads, extending back about 20 inches, strengthens the saddle on the outside of the bed supports. A 1¾-inch vertical rib, struck on a radius of 50 inches on four ends of the saddle, keeps the ways from spreading horizontally in the length of 65 inches. The top face of the saddle is 1¼ inches thick. The bed is taper gibbed to the saddle. Automatic trips are spaced 63 inches apart instead of 28, as on the standard machine. The table area is 23½ x 62½ inches. Six-inch oil pockets



EXTENDED TRAVERSE BORING, MILLING AND DRILLING MACHINE

are provided on both ends of the table. To support the end of the screw and to allow for the proper amount of traverse, a 10-inch housing is bolted to the table. The sides of the housing are wide and hollow to pass over the

Adjustment of the spindle head plates and outer support are made by screws, fitted with micrometer collars, graduated to 0.001 inch, making is possible to bore, mill and drill surfaces to exact distances without the use of jigs. For

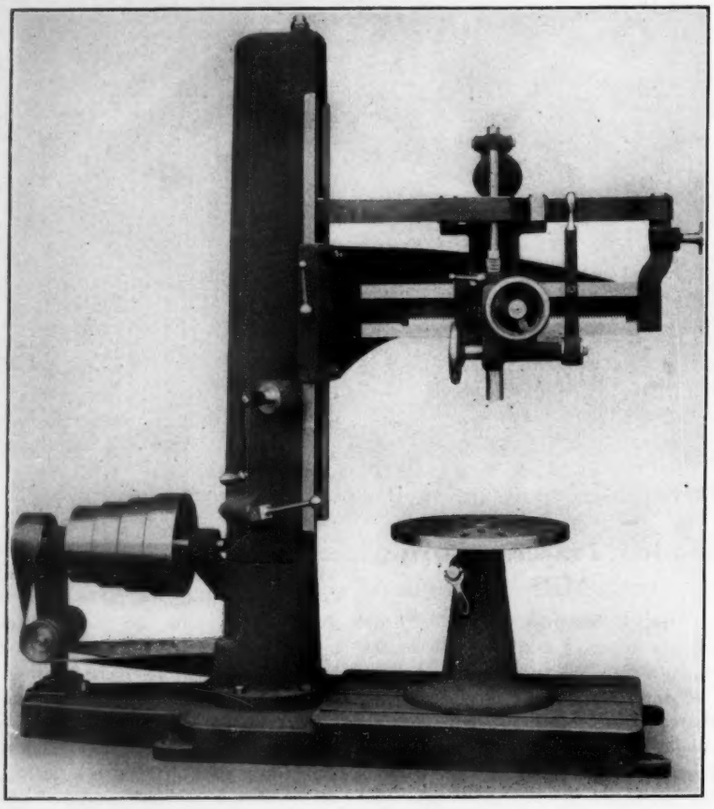


FIG. 1—SENSITIVE, HIGH SPEED RADIAL DRILL

driving mechanism of the feed. The table has a longitudinal motion by hand and a cross feed by hand or power.

In general construction, the machine is similar to the Fosdick, No. 0 boring, drilling and milling machine. The spindle head has a traverse of 23 inches and a vertical adjustment of 27 inches. It is fitted with an automatic safety device to prevent accidents. The spindle head is made of crucible steel running in a cast iron sleeve, which is carried in bronze bearings equipped with a device to line up for wear. The front of the sleeve forms a face plate for attaching large milling cutters and facing heads.

With a countershaft speed of 400 revolutions per minute, the eight-spindle speeds range from 12½ to 155 revolutions per minute and are used with either a cone or speed box. Both drives are controlled from the front of the machine. A four-step cone pulley with the largest step 14 x 3¼ inches for a 3-inch belt is used. Eight feeds, ranging from 0.007 to 0.250 inch, are possible, all reversible and obtained through one box.

motor drive a constant speed, five-horsepower at 1,050 revolutions per minute, or a variable speed motor, ratio 3 to 1, at 225 to 675 revolutions per minute, is necessary. The approximate net weight, without motor drive, is 8,000 pounds.

High Speed Sensitive Radial Drill

A high speed sensitive drill, especially designed for driving high speed twist drills from ¼ to 1 inch in diameter, inclusive, manufactured by the William E. Gang Co., Cincinnati, is shown in the accompanying illustration. No gears are used in the transmissions and the belt drive makes it practically noiseless even at the highest speeds. A two-speed friction countershaft and a four-step cone pulley provides for eight spindle speeds in geometrical progression ranging from 300 to 1,170 revolutions per minute, which give an average velocity of 80 feet per minute for drills ranging by sixteenths from ¼ to ⅜ inch, inclusive, and by eighths, from ½ to 1 inch, inclusive. This speed gives good results under average shop conditions, but where desired, the countershaft can be driven at greater speeds to give the highest speeds at which high speed twist drills can be operated. In tests made on this machine, ½-inch, high speed twist drills, running at 900 revolutions per minute, have drilled through a 2-inch cast iron plate at the rate of 25 inches per minute under a feed of 0.028 inch per revolution of the spindle.

The belt running into the base of the column transmits the power from the cone pulley to a shaft that extends the full length of the column. A pulley on this vertical shaft, carried by a bracket extending into the column from the radial arm, and driven from the shaft through a spline and feather, transmits the power by a horizontal belt to the spindle. This spindle belt is so arranged and supported by the idler pulleys, that while the belt encircles half the circumference of the spindle pulley at all times, the same tension is maintained in the belt irrespective of the position of the head. No springs or counterweights are used. The idler pulleys are so placed with reference to the spindle pulley that the driving belt has an equal contact on both sides of the spin-

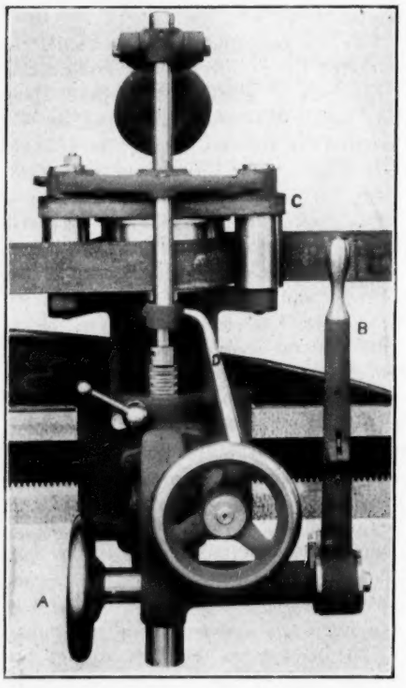
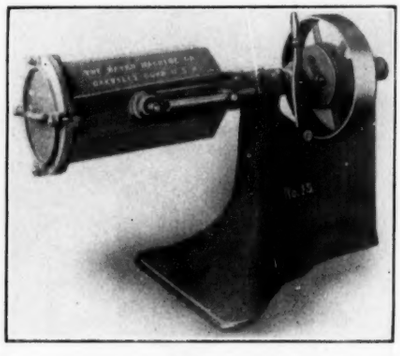


FIG. 2—TAPPING ATTACHMENT ON DRILL

dle pulley, exerting a balanced pull, and producing no side strain upon the annular ball bearing of the spindle. Provision is made in both belts to take up the slack due to stretching. The spindle is brought rapidly to the work by

the hand wheel, *A*, Fig. 2, at the left of the head, and fed into the work by the lever, *B*, at the right. A ratchet on this lever provides for adjustment to the most convenient position for drilling. When thrown to the vertical position, a latch automatically locks the lever and prevents it from falling, but does not release the spindle from the lever, thus maintaining the relative position of the lever and drill and avoiding the re-setting of the feed lever for each hole where a number of holes are drilled in the same place. By throwing the lever into another notch the spindle is freed from control of the lever, and can be advanced by the hand wheel. A direct-connected spindle counterweight makes the lever feed extremely sensitive.

The arm is rigid, strongly webbed and is made in D-section. It is raised and lowered by a crank at the side of the column where a pair of bevel gears connect the crank with the elevating screw which acts upon a stationary nut



SINGLE, BALL BURNISHING BARREL

bolted to the arm. The thrust of the screw is taken on a ball bearing and is clamped in position by the ball lever shown in Figs. 1 and 2. The head or saddle is moved on the arm by rack, pinion and hand wheel, and can be clamped in any position. A conical roller bearing takes the weight off the column and the column is clamped by a quick-acting cam lever, hexagon nut and draw bolt.

A tapping attachment, as shown in Fig. 2, is furnished with this drill. Like the drive of the machine proper, not a gear is used in connection with this attachment, the spindle being reversed by the narrow belt, *C*, shown at the top of the head on the upper spindle pulley. This belt receives its power from the idler pulleys on the head, which revolve in an opposite direction from the lower spindle pulley driving a pulley supported on a plate directly above the spindle pulley running in the same direction as the idler pulleys and opposite to the lower spindle pulley. Between the upper and lower spindle pulleys is a cone clutch operated by a bent lever, *D*. This clutch is held in engagement with the forward or lower spindle pulley by a powerful, self-contained spring, causing the spindle to run forward. By pulling the lever the clutch is withdrawn from the forward reversing pulley and is engaged with the reversing pulley to run the spindle back. When the lever is released, the spring draws the clutch from the upper reversing pulley and into the forward pulley. An adjustable idler takes up belt stretch. The tapping attachment will pull taps up to and including ¾ inch U. S. S., and will operate up to 1,170 revolutions per minute without noise or vibration, and as the spindle alone reverses, it is extremely sensitive.

Annular ball bearings are used throughout, the bearings taking all radial and thrust loads, to reduce the friction to a minimum. The radial arms are made in 2, 2½, 3 and 3½-foot sizes. Any style of table for special work may be fitted to the drill.

Single, Ball Burnishing Barrel

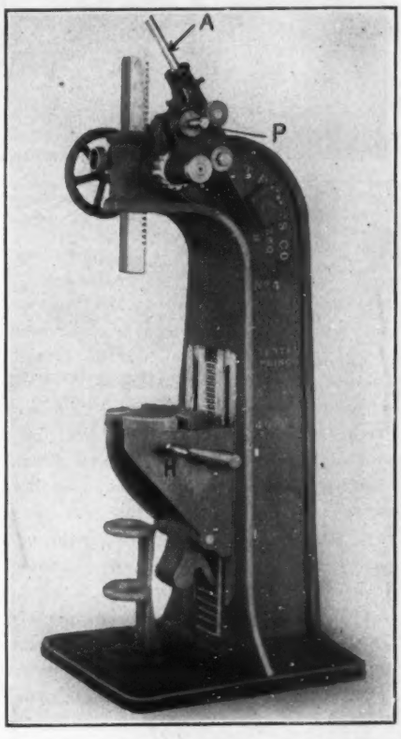
A single, ball burnishing barrel, built by the Baird Machine Co., Oakville, Conn., of small capacity and which can be used to advantage by concerns having only a limited output, is shown in the accompanying illustration. The same features of construction of the double barrel machine are incorporated in the machine shown herewith, and include the friction clutch drive, tilting barrels, brass cover, wood-lined barrel, etc. The friction clutch pulley permits the machine to be belted to the main shaft either parallel or at right angles to it. This machine is made in two sizes with barrels 10½ x 24 inches and 16 x 30 inches, respectively.

A New Mandrel Press

Illustrated herewith is a new mandrel press recently placed on the market by the C. T. Eames Co., Kalamazoo, Mich. The ram of the press is square and is operated by a rack and pinion movement. It slides in roller bearings fitted in the front and sides of the head. A lock nut is provided in the head so that the ram may be instantly clamped in any position while the work is being adjusted.

The most important feature of the machine is the system of levers by which the force applied to the ram is greatly multiplied. By changing the position of the pin, *P*, the main arm, *A*, is changed from a simple to a compound lever. As a simple lever the ram moves 2 inches in one stroke of the arm, *A*, and the force applied at the end of the arm is multiplied 135 times. When the pin, *P*, is engaged, the leverage is compounded, decreasing the stroke of the ram to ⅜ inch and increasing the power five times so that the leverage becomes 675 to 1. This makes it possible to insert mandrels tight enough to take heavy cuts on work at high speed.

Instead of a screw motion the table of the machine is adjusted by means of a rack, one revolution of the handle, *H*, being sufficient to raise the table from the lower to the upper limit of its travel. A simple eccentric clamp is



MANDREL PRESS

used to hold the table in position. The machine is built in four sizes.

The Aluminum & Metal Specialty Mfg. Co., Newark, N. J., which was incorporated recently with a capital stock of $25,000, will manufacture high class aluminum goods, metal specialties and aluminum and brass castings. The active members of the organization have had years of experience in the business, the incorporators being Christian Schmidt, Joseph B. Klausman, Henry Brucker and Oscar B. Brucker. While the company has a well equipped plant, the outlook for the future leads to the belief that it will be forced to expand within a short time.

Air Compressor Plant at Pullman Shops

In connection with the extensive improvements which have been recently made to the car building works of the Pullman Co., Chicago, a complete new air compressing plant was erected which is one of the largest of its kind in the west. The accompanying illustrations give a clear idea of the general features of the installation. The plant consists of two cross-compound, two-stage, steam-driven Corliss air compressors built by the Ingersoll-Rand Co., New York, together with the necessary boilers for generating steam. The compressors are of the latest type, equipped with air inlet valves of an improved design.

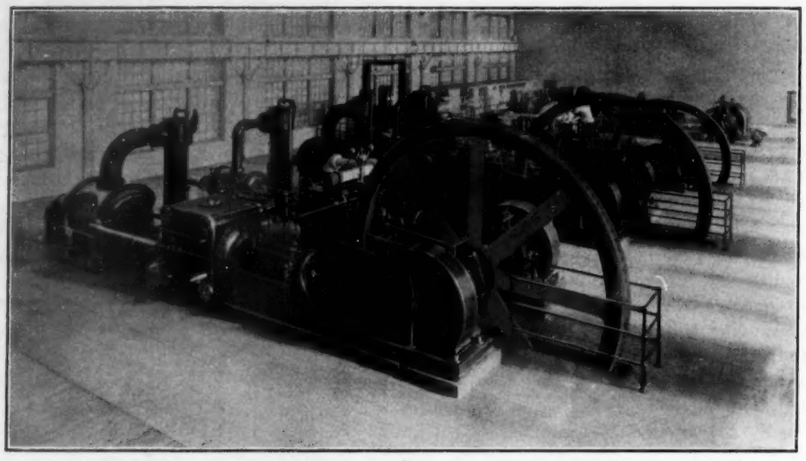


FIG. 1—GENERAL VIEW OF PULLMAN AIR COMPRESSOR PLANT

The steam end of each compressor consists of an 18-inch high pressure and a 40-inch low pressure cylinder equipped with drop release Corliss valve gear, and running condensing. The air end has a 36¼-inch low pressure cylinder compressing to 28 pounds per square inch. The air then goes through the inter-cooler and enters the high pressure cylinder, which is 22¼ inches in diameter. It is here compressed to 110 pounds per square inch and delivered to the distribution mains. The stroke of all the cylinders is 42 inches. The capacity of each unit is 4,000 cubic feet of free air per minute, at 86 revolutions per minute. Each machine develops 633 horsepower at this speed.

One of the most interesting features of the plant is the type of inter-cooler employed, which is shown in half section in Fig. 3. It is known as the Ingersoll-Rand 54-inch vertical type and is used to reduce the temperature of the air after it passes the low pressure cylinder. The nest of tubes shown in Fig. 3, is attached to a top and bottom tube head, and the hexagonal sleeve section of the cooler is slipped over the tubes before they are expanded into the heads. The lower shell of the cooler has a bored central guide at the lower end so that when the nest of tubes is set on top of the base, the lower tube head fits into this bored guide, preventing any side movement. Water enters the chamber below the lower head through a stuffing box connecting and passes through the tubes, rising as it heats. The water discharges from the top tube head cover.

All the air discharged from the low pressure cylinder of the compressor enters the top of the cooler through the chambered neck and passes down between the tubes, coming out at the bottom where the coldest intake water is coming in.

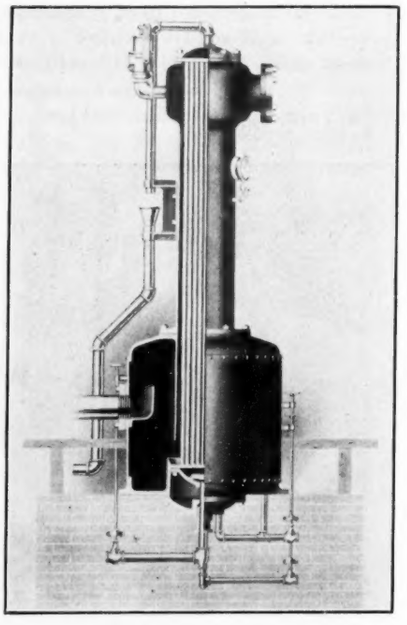


FIG. 3—TYPE OF INTER-COOLER USED AT PULLMAN AIR COMPRESSOR PLANT

In order to keep the air confined in close contact with the tubes, a hexagonal sleeve is set in the lower cooler body, enclosing the tubes to within a short distance of the lower tube head. The air coming into the receiver space at the bottom of the cooler loses its velocity and drops its moisture, the cold dry air passing out to the high pressure cylinder through a side outlet in the base section of the cooler. A baffle is placed in front of the outlet to further prevent water from coming out with the air. Condensed moisture settles in bottom of the cooler, from where it is occasionally blown off.

A funnel is attached to the water discharge pipe on the inter-cooler, so that a leakage of air can always be

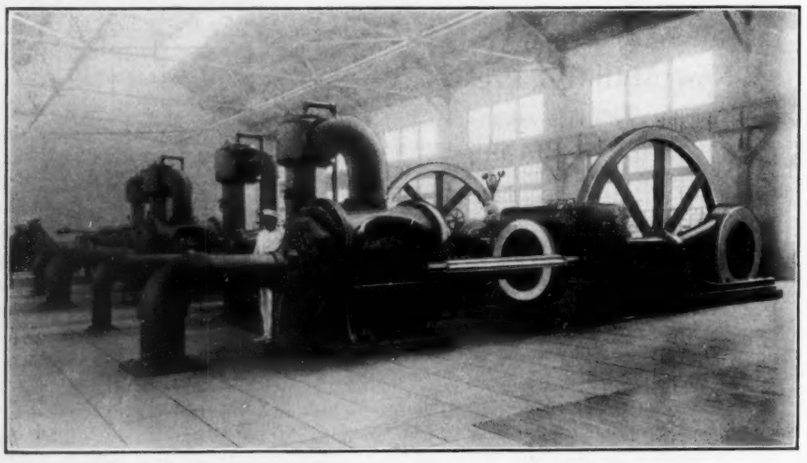


FIG. 2—AIR CYLINDERS, SHOWING METHOD OF INSTALLING INTER-COOLERS

discovered, and should any leakage exist, the top and bottom tube head covers can be removed and the leaky tube can be located and plugged at both ends or replaced with a new one. All parts of the cooler are readily accessible, and, as the air and water circulate counter-current, the apparatus is very efficient.

In order to further eliminate moisture from the air after it leaves the high pressure cylinder, another precisely similar device is employed as an after-cooler, taking the warm air as it leaves the high pressure discharge and lowering the temperature to approximately that of the atmosphere. This practically eliminates all moisture from the air before it goes out into the shop air lines.

Drinking Fountain for Industrial Plants

In the accompanying illustration is shown a drinking fountain for industrial

DRINKING FOUNTAIN

plants, manufactured by the Manufacturing Equipment & Engineering Co., Boston. The bubbler is connected with a bowl, strainer, waste pipe and floor flange, the bowl being only sufficiently large to catch the drip from the bubbler. The fountain is provided with a compensating device for regulating the height of the bubble, due to fluctuations in pressure. The waste runs through the center pipe into the drain water system. For the purpose of cooling the water for these fountains, a cooling tank, containing a coil, can be located underneath the lowest floor level and the coil should be so connected as to deliver water to all of the stations and to return it to the tank in a closed circuit. This circuit should be kept full of water and at a central point can be introduced a small centrifugal circulating pump.

Motor-Driven Swing Saw

For use in the shipping department of large manufacturing plants the Reno-Kaetker Electric Co., Cincinnati, has developed a swing saw of convenient design, which is motor-driven with the motor hung from the base casting instead of from the pins of the frame. One belt connects the motor and the saw, while the starting device is placed within reach of the operator. The saw can be mounted on the ceiling or side wall or standards for yard use as the base is one solid piece and perfectly rigid. It is built in five sizes to take saws from 16 to 32 inches in diameter at speeds from 2,450 to 1,225 revolutions per minute. The 16, 20, 24, 28 and 32-inch swing saws weigh, respectively, 525, 550, 550, 600 and 600 pounds. Any motor from 3 to 8 horsepower can be used in the frame, making the whole self-contained and motor-driven.

The Mechanical Engineer and Accident Prevention*

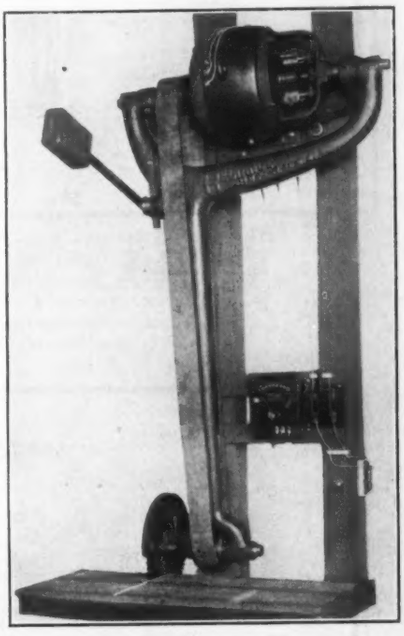
By John Calder

The vertical spindle molding cutters can also inflict serious injuries. Sometimes a leather knuckle-duster revolves with the tool and contact with it warns the workman of too close approach. Figs. 34, 35 and 36 show three forms of more positive safeguarding for this dangerous tool.

Punch and press machinery probably ranks next to wood-working tools in frequency of accident, though usually the operative escapes with less serious injury. The mechanical engineer cannot be too careful in seeing that these tools are in good repair, particularly the actuating gears. Automatic roll feeds, sub-presses, magazine, hopper, gravity slides, Fig. 37, and push slides feeds, Fig. 40, have done a good deal to eliminate the dangers of feeding such presses by hand but much work already blanked must still be handled in this way in subsequent punching and pressing operations.

The increasing use of compressed air in mechanical industries permits of light pieces being plown off the die at the end of the operation by a cam-operated blast properly directed and timed, Fig. 40. The ordinary spring ejector serves the same purpose for heavier work. Yet there are many punches and presses running today without the efficient safeguards here illustrated, and even where they are to be found the principles are not carried out consistently at all necessary places.

Fig. 40 is an example of a convenient flywheel guard, ordinarily locked in position, which the author arranged for a large series of small bench power presses worked by females. Provision is made in it for the tool setter having ready access for moving the flywheel by hand without detachment of the safeguard and resulting failure to replace it. The work in this machine is fed in by a push-slide and removed by a cam-actuated air blast. Figs. 38 and 39 show two forms of press guards, screen and bar respectively, which are timed to



MOTOR-DRIVEN SWING SAW

descend upon the operator's fingers, if in a position of danger, and secure their withdrawal before an accident occurs.

The third class of special apparatus essentially dangerous at the operating point is hand-fed rolling machinery of every description. A few of the safety suggestions which can be contributed by the mechanical engineer for this accident risk are illustrated in Figs. 41 to 46. At powerful hand-fed pressing and calendering rolls the injuries are usually very severe.

In the case of a single pair of large

*Read before the American Society of Mechanical Engineers; continued from page 403, THE IRON TRADE REVIEW, Feb. 23, 1911.

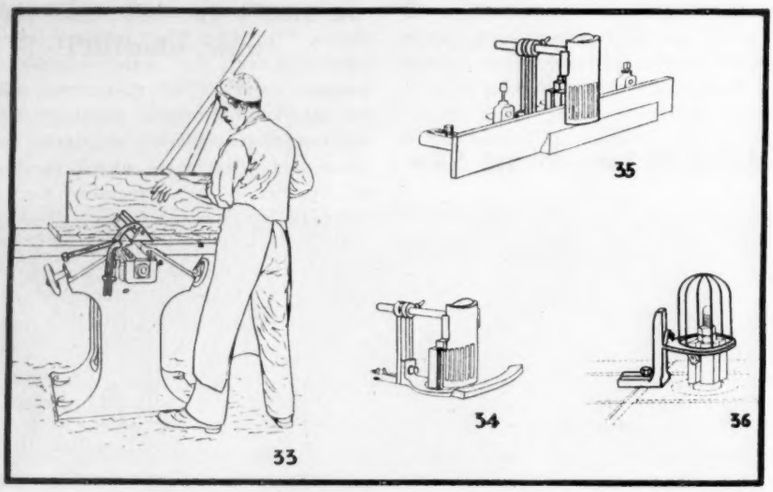


Fig. 33—Automatic-Positioning Jointer Guard
Fig. 34—Spindle Molder Screen Guard, Thin Work
Fig. 35—Spindle Molder Screen Guard, Thick Work
Fig. 36—Spindle Molder Cage Guard

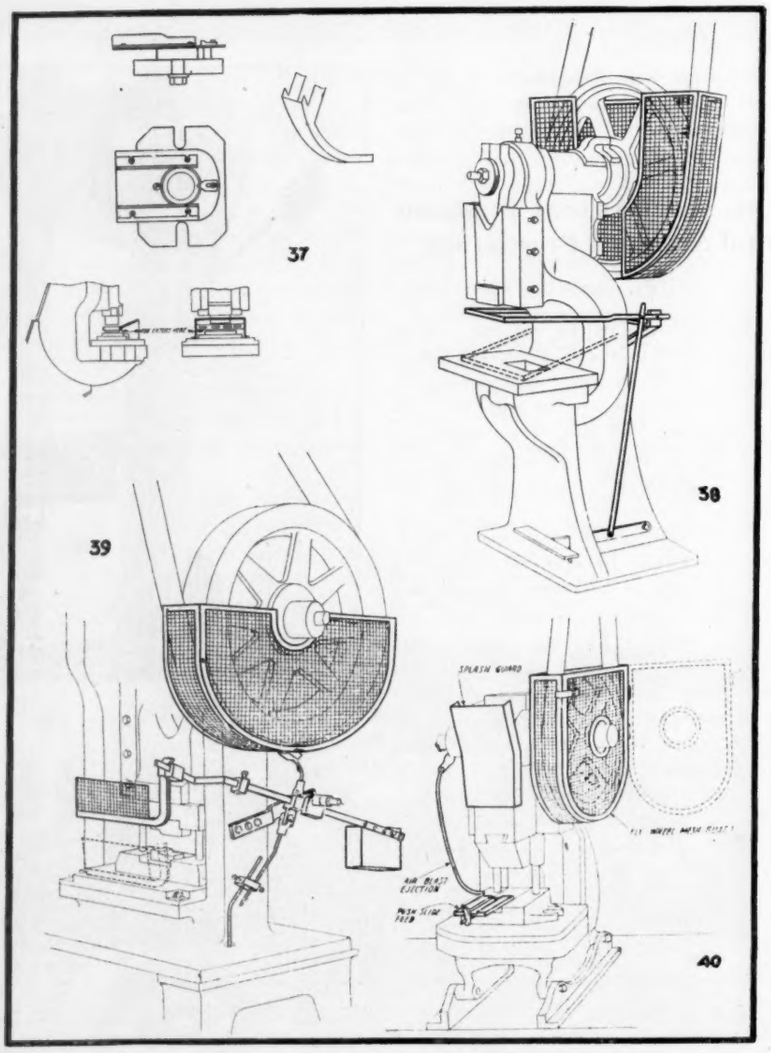


Fig. 37—Gravity Slide Press-Feeds and Screened Punch
Fig. 38—Automatic Bar Guard for Press
Fig. 39—Automatic Screen Guard for Press
Fig. 40—Guarded Flywheel, Splash Guard, Slide Feed and Air-Blast Ejection on Bench Press

rolls such as are used for paper glazing, Fig. 41, comparatively thin sheets of material are fed in and it is possible by having the feed table level with the top of the lower roll and placing a bar, plate or screen across the bottom of the upper roll, to guard effectively the dangerous intake by arresting the operative's hand when accidentally traveling towards it on the work. Fig. 44 shows this plan applied to rolls used for burnishing sheet metals. In Fig. 42, hinged guards, preferably of mesh work, are used where the intake of the rolls must be at all times visible and instantly accessible. The fixed forms of roll guards, however, wherever possible, are the safest.

It is found in practice that the chance of accident from hand-fed vertical rolls is considerably reduced when a feeding table is used which keeps the operator at a safe minimum distance from the roll intake and necessitates a conscious effort to reach it. When rolls are operating on plastic materials, for example, in color mixing and baking machinery, easy access for cleaning and scraping the rolls is essential and a suitably placed rod attached to the top roll housing and rising and falling with it takes the place of the plate and mesh guards already illustrated.

In laundry and cloth finishing machinery such forms of protection are not practicable on the rolls owing to the nature of the work. To meet such cases a light, smooth auxiliary hardwood roll, Fig. 43, is substituted as a guard. It is pressed constantly against the main rolls by springs and is driven by them, but it fills the dangerous intake and arrests any part of the hand accidentally traveling towards the latter and in danger of being crushed.

In compound power-fed rolls with continuous webs of work such as heavy paper and cloth, calendering machines, multiple floating guard rolls as described, Fig. 45, can be used, controlled and released by a system of levers whenever a break in the web necessitates restarting by hand feeding. Fig. 46 shows a method of starting in by hand the feed of a cloth calendering or similar web-pressing machine. A counter-balanced bevel-edged board is used which ordinarily swings up and out of the way. With this the operator can, with perfect safety, push the cloth or other web home till it is gripped by the rolls.

Emery wheels, grindstones and other abrasive tools when overspeeded or when strained or shocked while in motion within the limits prescribed by

the makers, sometimes burst with great violence and spread death and serious injury in the path of their flight. Various methods for confining the wheel fragments to the machine casing or at least rendering their velocity harmless have been worked out and some of these are illustrated in Figs. 47 to 51. In all of them ample side clearance between the wheel and its casing is a primary requisite.

Fig. 47 shows the method of safely mounting the wheel and avoiding all initial stress due to wedging, keying and driving it into the spindle. Fig. 51 is the cone-sided wheel so shaped that fragments due to a fracture starting at the wheel center cannot escape beyond the washer plates. Figs. 49 and 50 show various forms of armoring successfully used to retain fractured wheels or disc and face grinders.

Fig. 48 is especially armored for large wheels subject to shock. It has hinged sides of plate steel and a strong cast steel front guard also hinged. The guard as a whole can slide parallel to the plane of the wheel to take care of reducing diameter due to wheel wear and the hinged front guard can be dropped to meet the same condition. Wheels have been tested to destruction under all the guards illustrated without projecting fragments. Fig. 52 is a form of releasing grindstone rest which prevents accidents due to tools catching between the usual fixed rest and the stone.

Especially Dangerous Processes.

In addition to the wide scope afforded the mechanical engineer for assisting in the conservation of life and limb in the operation of industrial machinery, there are not a few matters calling for his attention and for administrative regulation at various dangerous processes used in the arts. Chemical, electrical, metallurgical engineers and other industrial specialists have to reckon with risks to health, which, though not all strictly accidents in the sense we have so far been considering, will probably before long become charges upon industry.

Here also our aim as engineers and humane employers of labor should be primarily prevention. In concluding this paper, only passing notice can be taken of the wide field of dangerous processes where the machinery risk is sometimes absent and in safeguarding which the application of the training and experience of the mechanical engineer is essential to the best result.

In all our industries executives have to reckon closely with the varying degrees of responsibility which can be

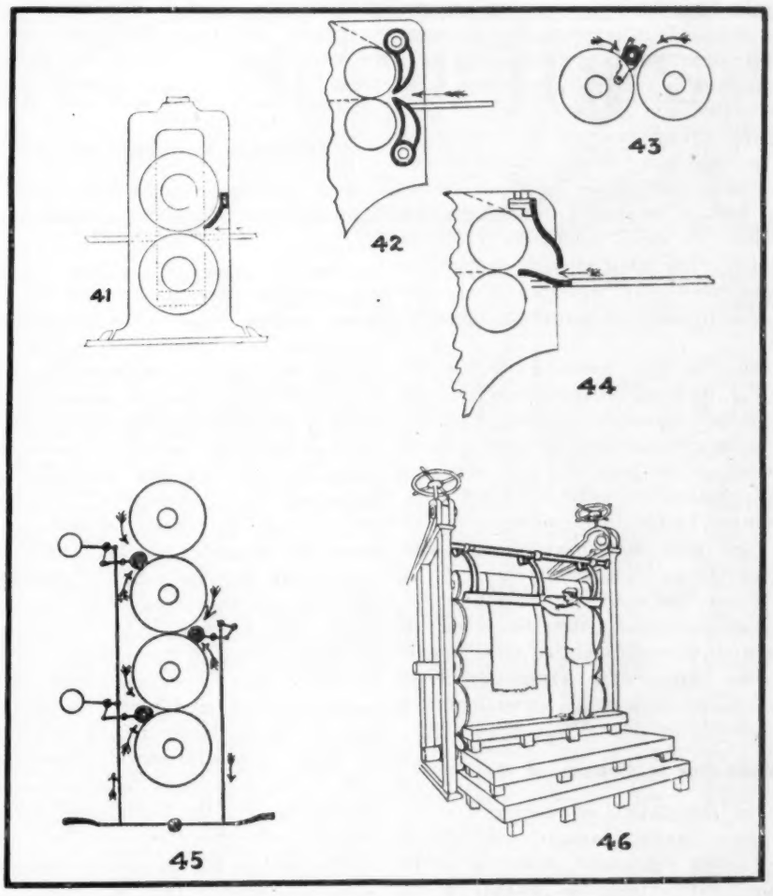


Fig. 41—Guarded Paper-Glazing Rolls
Fig. 42—Hinged Metal Roll Guards
Fig. 43—Laundry Press Safety Roller
Fig. 44—Guarded Metal Burnishing Rolls
Fig. 45—Calendering Machine Safety Rollers
Fig. 46—Calendering Machine "Starting In" Lever

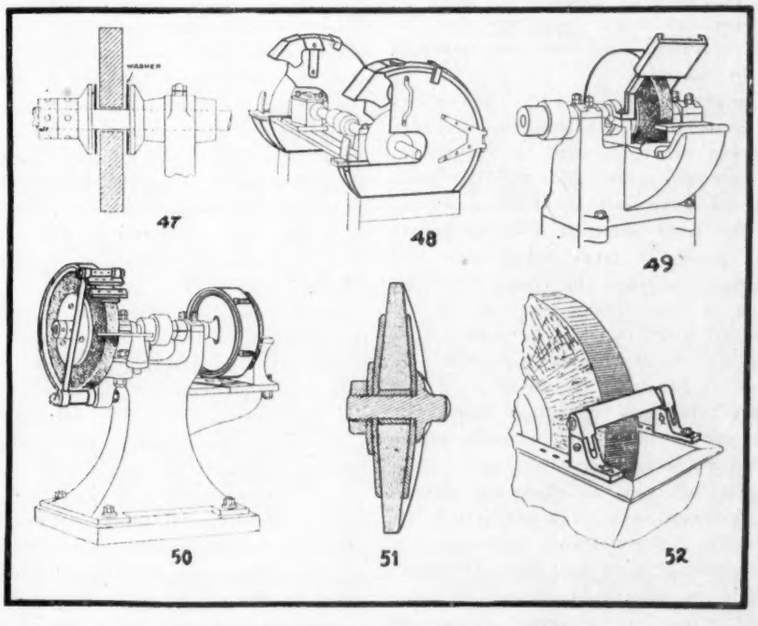


Fig. 47—Safe Mounting of Grinding Wheel
Fig. 48—Adjustable Heavy Armor for Disc Grinders Subject to Rapid Wear and Shock
Fig. 49—Safety Adjustable Hood for Disc Grinder
Fig. 50—Safety Adjustable Hoods for Disc and Face Grinders
Fig. 51—Safety Cone-Formed Grinding Wheel
Fig. 52—Releasing Grindstone Rest

devolved on the young persons, women and male adults respectively who constitute our labor forces. It would help somewhat in accident prevention, and not a little in education uplift, if in general hiring practice, no person of either sex under sixteen years of age was employed at or near machinery and if no employe whatsoever was allowed to clean machinery while in motion. The labor laws of the various states are more generous than this in the freedom permitted to employers.

Some of the existing restrictions are of doubtful constitutionality; and progress, meanwhile, is more likely to be made through voluntary enlightened action on the part of employers and other executives than by legal compulsion. In any case employment such as described may have serious civil consequences if it results in accident, and any employer is consulting important personal interests when he takes all possible steps to prevent dangerous employment about machinery and processes whether under statutory restriction or not.

Risks Due to Position of Machinery.

The installation of machinery in relation to walls, passages, and adjacent tools and equipment deserves careful consideration from the mechanical engineer. In any confined space over which any person is liable to pass and towards which the carriage of any self-acting or automatic reciprocating machine runs out there should be left a clear, 18-inch passageway between the carriage when fully out and the wall or other fixed structure not part of the machine.

Danger due to position also arises in connection with limited clearance between other traveling or reciprocating machine parts and walls or fixed structures, as well as at the openings in the fixed machine framing which they pass. In large lithographic and printing machines the frame openings, often of considerable size, if left unguarded will frequently be used by the employes to store small personal articles. In reaching for these while the heavy table was in motion more than one person has been instantly killed.

Readily adjustable sheet metal door or wire screens can easily be adapted to close up such openings, which are used to lighten frame castings, and end clearances of less than 18 inches should be effectively barred off from possible use as passages. Where the speed of the reciprocating part is considerable and a blow rather than a gentle push would be caused by accidental contact with it, the author recommends that the path of the piece be screened off permanently at the extreme end of its maximum working stroke.

Stationary Equipment Risks.

The protection of double rails of ordinary open stairs and gangways has already been referred to in discussing the causes of accident and the safeguarding of engines. Perhaps the most serious injuries in connection with fixed structures inside plants occur in chemical and bichromate works and in premises manufacturing paints, colors, oil, paper, soap, starch, sugar, etc., where large open receptacles for stock are in common use and the processes are necessarily continued day and night. These accidents arise from the absence at vats and pans, filled with boiling solutions or with liquors dangerous from their chemical nature, of some form of guard, rail or fence. Around these tanks and on or near their tops, in places often poorly lighted, men have to work. In most cases a double rail, 3 feet high at least, is easily provided but difficult to keep in good repair, in many instances, in the oxidizing atmosphere of the processes.

The author has found the best arrangement to be that where the top 3 feet of the vat or tank itself is used as a guard or fender and the working platform is this distance below the edge or lip of the dangerous vessel. Where boiling caustic or similar material is contained in the pans the provision of a counterbalanced dome-shaped cover which is ordinarily lowered by tackle over the pan prevents injuries to the skin and eyes through projection of any dangerous material. Gangways over tanks and vats should be double-railed on each side and their efficient maintenance closely watched. It is also well to round off the edges of open tanks or vessels, so that they offer no footholds.

Great practical difficulties surround the effective protection of workmen on temporary gangways, hatches and stages for the erection of which they are themselves sometimes wholly responsible. Such gang workers on bridge, shipbuilding and other large structural work and at docks will often fail to observe the most elementary precautions and cause many injuries to themselves and to others. Thus a gang of riveters or platers may erect a platform of merely one plank or two, where at intervals in the hull floor spacing a deep frame with plate stays occurs, and in passing along rapidly the obstructed headroom is forgotten and a serious and often fatal fall is the result.

Safeguards, where at all possible, should be constructed of metal to secure durability. Reinforced steel mesh work is preferred by the author for all but the heaviest machinery. It is superior to guards of opaque material since it permits easy inspection without detaching the safeguard and interferes as little as possible with lighting conditions. In steel mills, foundries and heavy work plants of various descriptions, where the wear and tear of equipment is very great nothing but strong castings or steel plate work should be used for the majority of the guards. It is the practice of the author to have all safeguards readily distinguished by painting the body of them vermilion and the reinforced edges black. This allows executives to detect at a glance in going through the shops a displaced or defective guard, such parts being often small in area, in inconspicuous places, and liable to be overlooked.

Warning and Caution Notices.

These should be sparingly used and as brief as possible. They give a possible legal protection from certain kinds of accident damage suits but they are practically worthless in every sense if no attempt is made to enforce them. The supervisory and educational efforts of fully instructed and sympathetic foremen receiving full credit for the safeworking of their respective departments and a few well-considered and enforced regulations prominently displayed in print are, the author believes, far more effective than a long catalog of works rules which few will read and none will remember.

First Aid.

It has been the practice of the author to give immediate and competent first aid services within the plant to every injured person. The prompt cleaning and dressing of slight accidental wounds gives great relief to the sufferer and renders any later medical attention more effective. In the majority of cases nothing more is needed but neglected or delayed treatment of simple injuries may have most serious consequences.

Every works executive and engineer will find it a valuable adjunct to the safety engineering of the plant to maintain in every department, apart from labor law and casualty insurance reports, a full and accurate record of every accident and also of every near accident.

IRON AND STEEL SECURITIES

The New York stock exchange on Saturday closed its dullest month since August, 1900. Ten years ago to the month all records before and since were broken with monthly sales aggregating 41,726,000 shares. In the past week the bond market showed most signs of life.

Monday the market opened weak, declined and then rallied, closing firm; grain markets closed lower. Tuesday's market opened weak, Steel stocks declining on rumor of Judge Gary's impending resignation, but rallied on explicit denial, the general market closing firm; copper metal reduced from 12½ to 12¼c. After a weak opening Wednesday, the market rallied; cotton advanced to the highest price of the year; Westinghouse Air-brake reached the highest price of the year. Thursday's opening was active and higher, but the close was heavy with small declines; cotton and grain markets declined. The market developed much strength Friday in the late dealings, Canadian Pacific and American Can preferred advancing to the highest ever quoted; wheat rallied slightly. Saturday's market was active and higher, Crucible Steel preferred advancing 4½ per cent and reacting 1¾.

Call money ranged from 2½ to 2 per cent during the week. Time money showed extreme ease throughout the week. Although May settlements of large proportions impended, the bank statements showed changes of slight significance. The statement of the actual condition of clearing house banks showed loans decreased $1,469,800, deposits decreased $710,500, reserve increased $456,100, surplus increased $635,400, and the percentage of reserve 27.89, compared with 27.84 the previous week. Non-member banks and trust companies reported loans increased $6,029,600, net deposits increased $5,647,100, and the percentage of reserve 17.6, an increase of 0.1. Commercial failures for the week were 232, compared with 263 the preceding week and 220 the corresponding week last year. Bank clearings of the country showed a decrease of about 5 per cent from the preceding week, and a decrease of 10.3 per cent from last year. Shares were sold to the number of 1,772,600, compared with 1,690,600 the preceding week, and 4,665,600 the corresponding week last year. Bonds, exclusive of government bonds, were sold to the amount of $14,792,000, compared with $11,880,000 the preceding week, and $11,884,000 the corresponding week last year.

	Closing Quo. Apr. 29	Changes in week	Annual Meeting date 1911.		Stock Outstanding	Basis	Dividend Last Dividend	Dividend Date Last Div. Pay.
Allis-Chalmers	7½	+ ⅛			$19,820,000			
Allis-Chalmers, pr	28½	+1¼	Nov.	2	16,150,000	7 cum.	1¾ Q.	Feb., 1904
American Can	107⅜	+1⅜	Feb.	1	41,233,300		1¾ Q.	
American Can, pr	86¼	+3½			41,233,300	7 cum.	1¾ Q.	Apr., 1911
Am. Car & Fdy	52½	+1¾	June	29	30,000,000		½ Q.	Apr., 1911
Am. Car & Fdy., pr	114⅜	— ⅝			30,000,000	n. c.	1¾ Q.	Apr., 1911
American Loc	37	+1¾	Oct.	17	25,000,000	5	1¼ Q.	Aug., 1908
American Loc., pr	104⅞	+ ⅞			25,000,000	7 cum.	1¾ Q.	Apr., 1911
American Ship	71	—1⅞	Oct.	11	7,600,000	4	1 Q.	Sept., 1910
American Ship, pr	111	.....			7,900,000	7 cum.	1¾ Q.	Apr., 1911
Am. Steel Foundries	43¾	— ¾	Dec.	7	17,184,000		1 Q.	May 1911
Barney & Smith	20	.....	June	6	2,000,000	4	1 Q.	Dec., 1907
Barney & Smith, pr	90	.....			2,500,000	8 cum.	2 Q.	Mar., 1911
Bethlehem Steel	32½	.....	April	4	14,862,000		.....	.....
Bethlehem Steel, pr	61½	—1			14,908,000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	46	+ ½	Mar.	21	45,000,000	5	1¼ Q.	May, 1911
Cambria Iron	45	.....			8,468,000*	4	2 S. A.	Apr., 1911
Chicago Pneumatic Tool	48½	—1	Feb.	20	6,485,800	4	1 Q.	Apr., 1911
Colorado Fuel	29¾	+1½	Oct.	16	34,235,500		1¾ Q.	Apr., 1902
Crucible Steel	131½	+1⅛	Oct.	18	24,578,400		3½.	.....
Crucible Steel, pr	82⅜	+5¾			24,463,500	7 cum.	1¾ Q.	Mar., 1911
Empire Steel	5	.....	Feb.	22	1,254,770		.....	.....
Empire Steel, pr	50	.....			2,500,000	6 cum.	2 S. A.	Jan., 1911
Fay & Egan	70	.....	Feb.	21	1,000,000	6 cum.	3 S. A.	Feb., 1909
Fay & Egan, pr	110	.....			1,000,000	7 cum.	1¾ Q.	Feb., 1911
General Electric	...	.....	May	9	65,179,600	8	2 Q.	Apr., 1911
Harbison-Walker	42	.....	Jan.	16	18,000,000		½ Q.	Mar., 1911
Harbison-Walker, pr	96	.....			9,600,000	6 cum.	1½ Q.	Apr., 1911
International Pump	40¼	+1¾	Dec.	12	17,762,500		1 Q.	Nov., 1910
International Pump, pr	87⅞	+ ⅜			11,350,000	6 cum.	1½ Q.	May, 1911
Lackawanna Steel	44	—2	Mar.	8	34,978,000		.....	.....
Lake Sup. Corp	28⅜	+ ⅝	Oct.	4	40,000,000		.....	.....
New York Air Brake	68½	—3½	Mar.	8	10,000,000	5	1½ Q.	Apr., 1911
Niles-Bement-Pond	94	.....	Feb.	8	8,500,000	6	1½ Q.	Mar., 1911
Niles-Bement-Pond, pr	104	.....			2,000,000	6 cum.	1½ Q.	Mar., 1911
Otis Elevator Co	67	+1	Mar.	20	6,375,000	3	2 S. A.	Apr., 1911
Otis Elevator Co., pr	99½	.....			6,310,000	6 n. c.	1½ Q.	Apr., 1911
Pa. Steel	60	.....	May	8	10,750,000		.....	.....
Pa. Steel, pr	104½	.....			16,500,000	7 n. c.	3½ S. A.	May, 1911
Pittsburg Coal Co	20⅛	+ ⅜	Feb.	10	28,104,600		.....	.....
Pittsburg Coal Co., pr	78¾	+ ¾			27,071,800	7 cum.	1¾ Q.	Apr., 1911
Pressed Steel Car	32¼	+ ½	Feb.	15	12,500,000		1 Q.	Aug., 1904
Pressed Steel Car, pr	101	+2			12,500,000	7 n. c.	1¾ Q.	May, 1911
Pullman	162	+2½	Nov.	8	120,000,000	8	2 Q.	May, 1911
Railway Stl. Spring	32	— ¼	Mar.	2	13,500,000	2	1 S. A.	Oct., 1908
Railway Stl. Spring, pr	99	— ½			13,500,000	7 cum.	1¾ Q.	Mar., 1911
Rep. Iron & Steel	32	+1	Oct.	18	27,191,000		.....	.....
Rep. Iron & Steel, pr	93⅛	—4½			25,000,000	7 cum.	1¾ Q.	Apr., 1911
Sloss-Sheffield	49½	.....	Mar.	15	10,000,000	5	1¼ Q.	Sept., 1910
Sloss-Sheffield, pr	112	.....			6,700,000	7 n. c.	1¾ Q.	Apr., 1911
U. S. Pipe & Fdy. Co	15½	.....	June	28	12,106,300	2	1 Q.	Dec., 1910
U. S. Pipe & Fdy. Co., pr	58¾	.....			12,106,300	7 n. c.	1¼ Q.	Mar., 1911
U. S. Steel	75⅛	+1⅝	April	17	508,302,500	5	1¼ Q.	June, 1911
U. S. Steel, pr	120⅜	+1⅜			360,281,100	7 cum.	1¾ Q.	May, 1911
U. S. Steel, 5s	105⅞	+ ⅛			463,798,000	5	.....	.....
Va. Iron, Coal & Coke	60¼	+ ¼	Sept.	19	9,073,680		5. †	Oct., 1907
Westinghouse Electric	69½	+4⅝	July	26	3,998,700*		3½ Q. **	Apr., 1911
Westinghouse Air Brake	149½	+4½	Oct.	3	13,750,000*		5 Q. ‡	Apr., 1911

Par value of shares, $100, except those starred (*), $50.
**Includes 1¾ per cent on back dividends.
†Stock.
‡Includes 2½ regular, 1½ extra and 1 special.

Copper Stocks.

New York.—Amalgamated Copper closed 63⅝, a net gain of 2⅜.

Boston.—Butte Coalition closed 17, a net gain of ⅜; Calumet & Arizona closed 49½, a net gain of 1; Calumet & Hecla closed 482, a net gain of 1; North Butte closed 28¾, a net gain of 1⅜; Quincy Mining closed 70, a net gain of 2.

Financial Notes.

The Pressed Steel Car Co. has declared the regular quarterly dividend of 1¾ per cent on preferred stock, payable May 24.

The American Radiator Co. has declared the usual quarterly dividend of 1¾ per cent on preferred stock, payable May 15. The regular quarterly dividend of 2 per cent on common stock has also been declared, payable June 30.

Rebating and Conspiracy Charged in Indictments

Handed Down by Federal Grand Jury at Cleveland—Statements Made by L. C. Hanna, Samuel Mather and President McCrea

The federal grand jury at Cleveland has found 13 indictments for rebating and conspiracy against four railroads and three individuals as follows:

For conspiracy, Dan R. Hanna, Robert L. Ireland, D. T. McCabe, vice president Pennsylvania Railroad.

Lake Shore & Michigan Southern Railway Co., five counts; conspiracy with Angeline Dock Co., Union Dock Co., Mahoning & Shenango Dock Co., Ashtabula Dock Co., Pittsburg & Conneaut Dock Co.

For rebating, Pennsylvania Railway Co., 35 counts; Lake Shore & Michigan Southern Railway Co., 32 counts; Bessemer & Lake Erie Railway Co., 28 counts; Nickel Plate railway, six counts.

The docks, while owned by the railways, are leased to operators, M. A. Hanna & Co., handling the Pennsylvania docks and Pickands, Mather & Co., the Lake Shore. Five dock companies altogether are involved, including those operated for the United States Steel Corporation and the Jones & Laughlin Steel Co. Specifically the charge is that the railways have rebated a portion of the freight rate to the dock companies and that the dock companies have in turn rebated a part of it to the shippers.

The practice complained of no longer obtains. The present inquiry is technical in character, involving construction of the law as to what rebating is. Both railways and dock companies contend that the transactions mentioned in the indictment were in no sense rebates but were rather an adjustment of earnings to give the shippers the benefit of decreased costs due to the installation of improved machinery.

D. T. McCabe, fourth vice president of the Pennsylvania railroad, Dan R. Hanna and R. L. Ireland, indicted for conspiracy, appeared in the federal court and furnished bond in the sum of $5,000 each for their trial on the criminal charge.

Interview With L. C. Hanna.

Leonard C. Hanna, brother of the late Senator Hanna, and uncle of Dan R. Hanna, when questioned by THE IRON TRADE REVIEW concerning the recent indictments, said:

"I was identified with the operation of the docks at Ashtabula from 1875 to 1905, and, during the last several years of my active connection with the business, was connected with all the Penna docks at Cleveland, Ashtabula and Erie. During that period of time there were, of course, many changes, not only in the physical operation by reason of improved machinery and the large increase in tonnage, but also in the dockage allowance per ton of ore. Of recent years the Pennsylvania Co. has paid to all furnaces and consumers of ore shipping ore over its docks and railroad a fixed sum per ton, which has always been named in its tariffs. These allowances represented the profit accruing from the amount allowed by the railroad company to the dock company for handling, and in all of these years all shippers have received the same allowance per ton, and the best evidence of its satisfaction to the consumers was the fact that during my active connection with the business I do not recall one single complaint or an intimation that there was any discrimination."

"I notice in all accounts given by the newspapers these allowances are referred to as rebates," was suggested.

"I cannot see why they should either be so called or considered, in the usual use or acceptance of that term. These allowances were published in the tariff issued by the Pennsylvania Co., and were in the case of every shipper, whether it be one car-load or ten thousand car-loads, paid alike. The distribution of these allowances was made through the firm or dock company as lessees or contractors for the railroad, and I know there was no discrimination. I am not now connected with the firm, but I am and have been, since I retired, in close touch with its business and know the business is conducted along the same lines as it has been for many years."

"Mr. Hanna, the papers appear to attach importance to some special allowance. Do you know anything regarding this?"

"Yes, I know that a special allowance was paid publicly to all consumers. This was a surplus created from the unloading charge paid by the vessels owing to the improved unloading machinery, and not by any money paid by the railroad company, and I also know that there was no discrimination, and that every consumer received his proper proportion of the surplus regardless of whether he was a small shipper or a large shipper.

"If there is any basis for action brought against the firm I believe it must be technical in character. But this I assume will all be brought out if the case is carried into the courts. The impression created is that the firm and railroad company have intentionally been guilty of wrong-doing. This I know is not so, and it is not fair that the public should so understand.

"I have no direct interest, but naturally I have a pride in the reputation of a firm that my brother, Mark Hanna, was the senior member of for 38 years, and of which I was a member for 30 years."

President McCrea's Statement.

The following statement is made by James McCrea, president of the Pennsylvania Railroad:

The action of the grand jury, so far as I understand it, is based on the following condition of affairs: During the year 1908, and a portion of the year 1909, iron ore was landed from vessels at docks on Lake Erie belonging to the Pennsylvania Co., which docks were being operated by M. A. Hanna & Co. as a dock company, with whom an agreement was entered into for handling ore from the vessels to the cars and docks of the railroad company. The vessels paid a fixed price per ton for unloading, and the railroad company a fixed price per ton for loading the ore on the cars, the prices thus established being the current prices at practically all of the docks of all railroads at Lake Erie ports.

Owing to the introduction of improved ore-handling machinery during this period, the cost of handling the ore was found to be less than the sum of the payments made to the dock companies by the vessels and the railroad companies, but the exact amount of this possible saving could not be determined until the close of the season. It was therefore provided in the agreement that after deducting from the gross receipts of the dock company, rental, cost of operation and maintenance, and proper remuneration for services rendered, that portion of the saving per ton published in the tariffs of the railroad company, filed with the Interstate Commerce Commission, was to be paid currently by the dock company to the consumers of ore, and any additional surplus or saving that might possibly remain at the close of the year should also be

apportioned among the consumers of ore in the proportion that the ore received by them over the Pennsylvania company's lines and connections bore to the total ore tonnage forwarded from the Pennsylvania company's docks. This, of course, absolutely insured uniform rates to all consumers of ore forwarding from those docks.

The tariffs duly published and filed with the Interstate Commerce Commission showed clearly the current payments to be made by the dock company to all these consumers of ore, but appear to have been silent as to the final distribution to be made by the dock company of any possible additional saving; consequently, if in the company's effort to carry out the exact spirit of the law and insure impartial treatment to its patrons, the failure to note in the published tariffs the provision for the final distribution of the possible additional saving (of which every consumer had not only knowledge but notice) was not strictly in accordance with the law, the violation was only technical and wholly unintentional.

There can be no question of discrimination involved, as all consumers, both large and small, were treated with strict impartiality; there never was nor could be any favoritism, for the rate to each one was exactly the same.

The indictment of Mr. Hanna, president of the dock company, and of Mr. McCabe, vice-president of the railroad company, for alleged conspiracy, appears to be due solely to the fact that it was they who executed, on behalf of their respective companies, this contract by which exact and absolute equality of rates to all consumers of ore forwarded from Pennsylvania company's docks was guaranteed.

Mr. Mather's Statement.

Mr. Mather's statement is as follows:

I have read the statements of President McCrea and Mr. L. C. Hanna with regard to the so-called dock company rebates and wish to endorse all they say as being absolutely in accordance with the facts.

Our firm of Pickands, Mather & Co. also has been managing and operating ore docks at several lake ports through dock companies under arrangements practically similar to those of the Hanna dock companies, except that our dock companies make no allowances other than those published in the railroad tariff, dividing any surplus among stockholders.

But as President McCrea and Mr. Hanna so clearly state, their further distributions are notably to all companies receiving ore over these docks, and without discrimination, and were not published beforehand for the reason that it was impossible to determine beforehand what such surplus might be from year to year.

Their allowances or distributions are, if anything, therefore, even more equitable than those of other dock companies, and certainly if they or we have been guilty of violating the law in any respect this is the first suspicion or intimation any of us has ever had of it.

There has been absolutely nothing underhanded in it—everything has been known by all parties concerned—the tariffs have been filed with the Interstate Commerce Commission; and if there has been any violation of the law on the part of any one of us, I am sure it can be but a technical and unconscious one at the worst.

Details of Indictments.

The indictment for conspiracy returned against Dan R. Hanna, Robert L. Ireland and D. T. McCabe, charges that on Jan. 25, 1909, the M. A. Hanna Co. leased from the Pennsylvania company docks 1, 2, 3 and 6 at Cleveland; docks 2, 3 and 5 at Ashtabula, and docks 1 and 4 at Erie, for a five-year period, the lease to continue from year to year after that time.

The power house at Ashtabula also was included in the lease, the annual rental being $154,662. These docks were equipped with ore handling machinery and the Hanna company agreed to organize a dock company to operate them and handle ore from the vessel to the pile or car at the rates agreed on. It is specifically agreed that all ore unloaded on these docks shall be reloaded in cars for the Pennsylvania lines and the compensation is set down at 20 cents per ton, that price to be reduced if the prevailing rates go lower. The copy of the contract as set out in the indictment then states:

Consumers whose blast furnaces are on the Pennsylvania lines, east or west of Pittsburg, whose shipments of ore pass over the docks of the Pennsylvania at Cleveland, Ashtabula and Erie shall be given an opportunity in an agreement to be formally entered into between the Hanna company and the consumer to share in profits of the said dock company on the basis of business handled by them over the docks.

Further along in the copy of the alleged contract is this statement:

And provided dock refunds are continued to consumers of ore by other dock companies.

The copy contains the statement that the dock company shall pay the cost of securing business, and operating the docks, "and also current payments to consumers of ore," then the remaining surplus shall be divided at the end of the dock year, which is March 31, proportionately on the ore shipped over the docks.

The indictment also sets forth an agreement between the Hanna company and Cambria Steel Co. for ore to be handled over the Ohio & Western Pennsylvania docks at Ashtabula and Erie for five years and provides for a refund of 12 cents per ton on the ore handled. It also states that, as the Cambria Steel Co. had handled an average of 1,190,428 tons per year over the docks for a period of three years past, it was to be entitled to that portion of the profits from the dock company, which was figured as being 17¼ per cent.

It also charges the Ohio & Western Pennsylvania Dock Co. with paying on April 29, 1909, to the Midland Steel Co. a refund of $9,311.10, and with paying to the Carnegie Steel Co., of April 1, 1909, the sum of $50,111.93.

Another payment of $27,920.19 to the Carnegie Steel Co. is alleged to have been made by the dock company on Oct. 7, 1909. On the same date it is alleged the dock company paid to the Jones & Laughlin Steel Co. the sum of $8,693.90.

The Bessemer & Lake Erie road is charged with conspiracy in connection with the business of the Pittsburg & Conneaut Dock Co. The indictment says that on May 31, 1908, the Carnegie Steel Co. received a check for $4,530.79 from the dock company, as "dockage allowance" for May.

The Lake Shore road is charged with conspiracy with the same dock company, and it is charged the dock company paid to the Carnegie Steel Co. July 31, 1909, the sum of $35,505.31 as "dockage allowance."

The Lake Shore also is indicted for conspiracy with the Ashtabula Dock Co., and it is charged the Ashtabula Dock Co. paid to the Youngstown Sheet & Tube Co. in September, 1908, for "dockage allowance" the sum of $3,791.27.

The indictment against the Pennsylvania railway contains 35 counts and sets forth the charge that rebates were paid to the following steel concerns: Jones & Laughlin Steel Co., American Steel & Wire Co., Midland Steel Co., Republic Iron & Steel Co., Shenango Furnace Co., Carnegie Steel Co., United Iron & Steel Co., Stewart Iron Co., Cambria Steel Co., L. & R. Wistar & Co., National Tube Co., Norton Iron Works, Wheeling Iron & Steel Co., Ashland Iron Co.

Pipe Line Contract.—The contract for the survey of the 53-mile pipe line to be built by the Guaranty Oil Co. from Maricopa to Santa Barbara, has been let to Barton & Parsons, of Bakersfield, Cal. It is reported that the company intends to construct another line from Santa Barbara to Los Angeles, paralleling the coast. Steel storage for 100,000 barrels will be provided.

EIGHT-HOUR DAY

Sought by Union Machinists in New York.

The strike of union machinists for an 8-hour workday in New York and Hudson counties began Monday, drawing skilled men from a number of shops. The men on strike are estimated to number between 5,000 and 10,000. Several thousand machinists in Brooklyn and Manhattan went out on Saturday. The National Metal Trades Association shops are opposing the men's demands, but several non-allied employers have granted the shorter workday.

Pennsylvania Shop Men Strike

Approximately 1,300 shop men employed at the Pitcairn, Youngwood, Derry and Conemaugh, Pa., shops of the Pittsburg division of the Pennsylvania railroad went out on strike on May 1. So far the strike has not affected the Altoona, Pa., and Twenty-eighth street, Pittsburg, shops, although additional men planned to go out later in the day. Some weeks ago the company laid off a number of shop men, and the allegation was made by labor leaders that men, who had been employed by the company for many years and who are identified with the American Federation of Labor, were discriminated against in favor of the younger non-union men.

Spanish Ore Lower

The lowering of the price of Spanish iron ore is thus commented on by the Middlesbrough, Eng., correspondent of the *Iron and Coal Trades Review* in its issue of April 21:

Rubio ore is nominally at 22s 6d per ton for delivery here, but it is reported that if consumers would order a considerable quantity they could obtain the ore for quite 1s per ton less; in fact, it is stated that as little as 21s per ton delivered here has actually been taken, and with mixed numbers at 63s the makers cannot very well afford to give more. The large imports of foreign ore continue, and besides this a good deal of manganese ore is coming in from India.

Detroit Engineers.—At the recent annual meeting of the Detroit Engineering Society, the following officers were elected for the year 1911-12: President, Ralph Collamore, treasurer of Smith Hinchman & Grylls, Detroit; first vice president, Charles Y. Dixon, U. S. assistant engineer, Amherstburg, Ont.; second vice president, George H. Fenkell, civil engineer, board of water commissioners, Detroit; secretary-treasurer Frederick H. Mason, 612 Moffat building, Detroit.

Fire at Plant of Canada Car & Foundry Co.

The workshops of the Canada Car & Foundry Co. at Amherst, N. S., were partially destroyed by fire April 27. The greater portion of the plant was saved, the buildings destroyed comprising the forge shop, gray iron foundry, machine shop, blacksmith shop, brass foundry and the store rooms of the bolt and forge department. The loss is estimated at about $200,000 covered by insurance. A large number of men will be temporarily thrown out of employment.

Plans are Abandoned for Present

At a meeting of the board of directors of La Belle Iron Works at Steubenville, O., on April 25, it was decided to abandon plans for the proposed new sheet mills for the present at least. Estimates had been prepared for about 10 new mills. It is reported that the directors decided to postpone action on the proposed additions to the present plant until it is definitely decided whether tin and sheet products will go on the free list.

Plans Additions

The Keystone Bronze Co., Pittsburg, which recently purchased the plant of the Brighton Brass & Bronze Co., New Brighton, Pa., and the bronze and copper departments of the Best Mfg. Co., Pittsburg, is having plans prepared for extensive improvements and additions to its newly acquired property, details of which have not yet been announced. The company manufactures copper blast furnace equipment, as well as valves, bearings and similar bronze and brass castings.

New York Copper Exports

Copper exports for the month of April amounted to 27,446 tons, an increase of 14,404 tons; for the month of March 23,300, an increase of 3,337 tons; total from Jan. 1 to April 30, 99,115 tons, an increase of 14,153 tons.

Acorn Brass Mfg. Co., Chicago, has increased its capital from $200,000 to $300,000.

WILL COMPLETE

Work Under Way at Birmingham, Says Judge Gary.

Recent interruption of construction work of the United States Steel Corporation in the Birmingham, Ala., district has not had, as has been reported in the press, any purpose of influencing pending national legislation, according to an official statement issued by Chairman E. H. Gary on Wednesday afternoon, which deals fully with the situation. Work upon these improvements has been resumed during the past few days, Judge Gary says in his statement, which is as follows:

The subsidiary companies of the United States Steel Corporation have been working upon a plan for the expenditure of large sums for extensions and new buildings and equipment at Birmingham. A large part of the buildings has been constructed, and they will be promptly completed. In fact, the work could not be interrupted without serious detriment. This includes a large reservoir and water plant and a large number of by-product coke ovens for the Tennessee Coal, Iron & Railroad Co., and also includes a large wire plant for the manufacture, among other things, of wire products by the American Steel & Wire Co. It was intended to erect a large number of residences for occupancy by the men to be employed; and it was also intended to install expensive machinery.

It has seemed to the officials of the Steel Corporation that house bill No. 4413, reported by the committee on ways and means to the house of representatives, if it should become a law, would seriously affect the manufacture and sale of some wire products in the Birmingham district because of the low cost of production of these articles in foreign countries and the low rate of transportation in returning ships. Therefore, local officials were advised to suspend or postpone consideration of the question of making contracts for residences or for extensions or equipment of the mills until after the whole subject-matter could be carefully considered. The advices seem to have been misinterpreted to some extent and all or much of the work on the buildings in progress of construction was interrupted. Upon learning this fact, the local officials were advised of the real intention of those in authority, as above stated, and work was thereupon resumed. Exactly what uses will be made of the wire buildings cannot be definitely or certainly stated at this time, but it is believed they will eventually be utilized for some lines of steel manufacture.

There has been no intention or effort to influence or antagonize legislation. We present our views and reasons when asked, but submit without question to the decision of those who are responsible for legislation and its results. We have a good opinion of the Birmingham properties and hope in time to operate them at a reasonable profit. Our action, however, has been and will be based on what we consider sound business principles.

WELFARE WORK

To Be Actively Pushed by Institute—New Committee.

Plans are crystallizing for carrying forward in a comprehensive way, the movement for general welfare work among the employes of steel companies which has been one of the high purposes outlined in the work of the American Iron and Steel Institute from the beginning of its organization. Considerable preliminary progress has already been made and at the monthly meeting of the directors of the Institute in New York, April 26, it was announced that affairs had shaped themselves for definite action and that the work would go forward from this time in a vigorous manner.

President E. H. Gary of the Institute, who is giving the welfare movement active personal interest and thought, announced at the meeting that it is the purpose of the organization to apply its energies to cover the whole field of activity in behalf of a betterment of the living and working condition of the steel workers. It is proposed to enlarge to a new standing committee of many members, the present six-day-a-week committee, which has been at work on the plan to eliminate the seven-day week in the mills since its appointment, following the international meeting of steel makers in New York last fall, when a notable address on this subject was presented by William B. Dickson, then vice president of the United States Steel Corporation. This committee at present is composed of Wm. B. Schiller, president of the National Tube Co., as chairman, E. A. S. Clarke, president of the Lackawanna Steel Co., J. A. Campbell, president of the Youngstown Sheet & Tube Co., G. G. Crawford, president of the Tennessee Coal, Iron & Railroad Co., and F. W. Wood, president of the Maryland Steel Co., with Judge Gary acting in a supervisory capacity.

The new standing committee on welfare work in addition to the present six-day-a-week committee, will include a large number of other prominent steel makers and its investigations and recommendations will cover the broadest scope of welfare work in all its different phases. President Gary announced that he proposed to make this committee thoroughly representative of the entire iron and steel industry of this country and that because of the importance of the matter, he had decided to give careful thought to the selection of additional members. Accordingly, announcement of the new standing committee will not be made for several weeks.

The six-day-a-week committee reported the progress made by it, to the directors of the Institute and stated that it had about worked out what seemed to be a practical plan for carrying out the purposes for which it had been created. Announcement of these plans is expected to be made in the near future.

Vanadium Sales Organization Perfected

The Universal Vanadium Co., Pittsburg, which was incorporated a short time ago under the laws of Delaware, has these officers and directors: President, Edward M. McIlvain, 30 Church street, New York; vice president, Col. Millard Hunsiker, 23 Rue de la Paix, Paris; secretary and treasurer, James C. Gray, Frick building, Pittsburg; European representative, Joseph W. De Wyckoff, 64 Victoria street, Westminster, London, Eng.; E. Marshall Fox, Wetley Rocks, Staffordshire, Eng.; Sylvester D. Townsend Jr., Wilmington, Del.; Wm. McIlvain, Reading, Pa.

Since the formation of the American Vanadium Co., the entire product of vanadium alloys produced by this company has been marketed by the Vanadium Sales Co. of America, the offices of both these companies being in the Frick building, Pittsburg. Its products, especially ferro - vanadium, have been sold in every manufacturing country of the world. The Universal Vanadium Co. was formed for the purpose of acting as selling agent for the American Vanadium Co. in a more comprehensive and effectual manner, and it will act in a selling capacity in conjunction with the Vanadium Sales Co., both companies thus taking charge of the entire product of the American Vanadium Co.

Welsh Tin Plate

Swansea harbor trust returns for the week ending April 15, with comparisons, follow:

	Week of Apr. 15. Boxes.	Previous week. Boxes.	Corresponding week last year. Boxes.
Received	98,773	116,258	101,470
Shipped	65,406	149,452	138,677
Stocks	253,386	220,019	157,017

The Pere Marquette Railroad which recently placed an order for 50 locomotives with the American Locomotive Co. has modified this contract by specifying for 25 consolidation locomotives of a heavier type than originally called for.

Adrian Furnace Co. put its stack at Du Bois, Pa., out of blast May 1, for an indefinite period.

TUBE MAKING

Explained to Members of Railway Club of Pittsburg.

More than 400 members of the Railway Club of Pittsburg were given an opportunity to observe the manufacture of Shelby cold drawn tubes and Shelby hot rolled seamless tubes at the Ellwood City, Pa., plant of the National Tube Co., Friday afternoon, April 28. On Friday evening, F. N. Speller, metallurgical engineer of the National Tube Co., read an interesting paper on "The Development of Locomotive Tubes and Their Treatment" at the regular monthly meeting of the Railway Club. Lantern slides were used to show the old and new processes of making tubes. A large number of railroad officials took part in the general discussion which followed.

As guests of the National Tube Co., members of the Railway club and their friends left Pittsburg at 12:30 p. m., on a special train over the Pittsburg & Lake Erie railroad, arriving at Ellwood City about an hour later. Luncheon was served in two large baggage cars, which accommodated 140 people at one service. A light luncheon and refreshments were served on the return trip. Each member of the party was presented a handsome watch fob made of Shelby steel tubing.

When the train arrived at Ellwood City a number of guides met the party and for the following two hours were kept busy explaining to the visitors the details of the operation of the large plant. The visitors were given an opportunity to study the manufacture of tubes from the time the steel in blooms 7 inches square and about 6 feet long are placed in the heating furnace until they are ready for shipment. The Ellwood City plant is the largest and most modern of its kind in the country.

St. Louis Shipments

Receipts and shipments of pig lead and spelter at St. Louis for the last two weeks were as follows:

	Zinc and spelter.	Pigs of lead.
Receipts:—		
For week ending April 22	104,150	32,390
For week ending April 29	84,240	25,650
Shipments:—		
For week ending April 22	103,830	42,300
For week ending April 29	119,420	27,360

The Eastern Steel Co. announces that its New York office, now at 71 Broadway, will be located after May 1 at 60 Broadway.

THE IRON TRADE REVIEW

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January, 1910	5,861
February	5,703
March	5,754
April	5,793
May	5,827
June	5,842
July	5,864
August	5,875
September	5,895
October	5,955
November	5,993
December	6,026
January, 1911	6,058
February	6,072
March	6,091

May 4, 1911

Alex. E. Brown

Alexander E. Brown, who died at his home in Cleveland, April 26, was a most important contributor to the improvement of ore handling methods on the great lakes. His life was indeed strenuous, and ended at the time when he should have been in his prime. He was the very embodiment of concentrated effort, and the great Brown-hoist plant is the result of his energies. His inventive faculties were of a very high order, and the revolution which his methods wrought in the handling of iron ore is one of the wonders of modern industrial history.

An Astounding Proceeding

For 40 years, the name of Hanna has been synonymous with business honor.

Two members of the firm of Hanna are charged with a crime punishable by imprisonment in the penitentiary.

That these two statements can both be true is so startling as to be almost beyond belief, but that fact illustrates what astounding proceedings are being instituted nowadays by public officials who seek to promote their own ambitions and win the applause of a misguided, misinformed public.

During his career in politics, and in the large affairs of the nation, Senator Hanna was attacked with a vindictiveness of which few public men in the history of the country have been the subjects, but his bitterest enemy never accused him of personal dishonesty or of lack of business integrity. How is it that, a few years after his death, the government officials have become so wondrous wise that they have discovered that this firm of Hanna is a nest of criminals? Have the methods of the firm radically changed since the passing of the Senator? Leonard C. Hanna gives testimony that they have not, and everyone who has had business relations with the firm will substantiate that testimony. Why, then, this charge of conspiracy? It is simply an outgrowth of the campaign against the railroads and other companies which has been in progress for many months. It is not our purpose to question the motives of all officials of the government. Some of these public servants are worthy of the highest commendation for worthy efforts to right wrongs, but others are shameless notoriety seekers. We submit, that business men like Messrs. Hanna, Ireland and others, now accused, should be given credit for just as lofty motives as those actuating the highest minded officials of the government; and that they should also be credited with a reasonable amount of common sense. It is inconceivable that these men of long experience in the industrial world—men of unsullied reputation—would act without legal advice. They are entitled to the presumption that they did so, and had no intention to violate the law. The statements made by Messrs. McCrea, L. C. Hanna and Samuel Mather indicate that the spirit of the law was not violated. Whether there was violation of the letter of the law, must be decided by the courts.

It does not seem probable that a conviction can be obtained on even a technical violation of the letter of the law. The basis of all laws against rebating is that a rebate is unjust discrimination. The righteous indignation which aroused strong opposition to rebating was due to the practice of railroads in past years of giving rebates or refunds to certain favored shippers. If all shippers were treated alike, there could be no complaint, and this is exactly what was done by the Pennsylvania docks, through M. A. Hanna & Co., who operated the docks. When, in the year 1908, it was found that owing to the installation of improved machinery, it would be possible to handle the ore at the docks at greatly

reduced cost, the railroad company took the position that it would not be fair for the dock company operating the docks owned by the railroad to have the benefit of all the profit. Hence, it was suggested by the railroad company that, after the dock company had taken a reasonable profit for the handling of the ore, the surplus should be refunded to the shippers. No rate was published in the tariff because it was impossible to state what the rate would be. The amount of the refund could be ascertained only at the close of the season after the cost of handling had been determined. This was done for three years. After enough time had elapsed, so that it was possible to determine the profit accruing with the new machinery, the charge to all shippers was reduced accordingly, and the practice of making a refund was abolished. These are the simple facts in the case. An honest effort was made to give the benefit of improved machinery to every shipper. The man who shipped a carload got his share of the refund just as certainly as did the company which shipped 1,000 cars.

A word in conclusion as to the attitude of M. A. Hanna & Co., concerning this investigation and the subsequent prosecution. About a year ago, the investigation was instituted by the Interstate Commerce Commission. Representatives of the commission were sent to Cleveland, called at the office of M. A. Hanna & Co., and were given free access to all books, contracts, vouchers, checks and every description of record that was of any interest to the commission. The services of employes of the company were freely given, and they escorted representatives of the commission to the docks, giving every opportunity for inquiry. The commission was so pleased with the response and co-operation of the firm that it sent a letter of thanks and appreciation to M. A. Hanna & Co., who were anxious to improve their business methods with the aid of the commission, if that could be done. Following this investigation, the grand jury inquiry was inaugurated some time ago, and again the vouchers and other records of the firm were placed at the disposal of the commission. Young men in the employ of the company went into vaults and unpacked dust-covered vouchers, which were taken out and sent to the grand jury room. Every scrap of paper asked for by the grand jury was furnished, and not a particle of information of any kind was withheld.

Could anything be more unlike the conduct of a guilty man?

In return for these services of the firm, the officials of the government have seen fit to resort to the most drastic measure known to the law. Instead of proceeding, as has been done in other cases, to give an opportunity to the offending company or association to change its methods, no consideration whatever was shown, and two members of the firm and one railroad official were promptly branded as criminals. This action is not, we believe, in harmony with the fair-minded spirit of President Taft. It is much more like the action of the agitator who, filled with jealousy on account of the successes of others, is opposed to big business simply because it is big, and is determined to break it down to the full extent of his limited ability. It is this kind of proceeding that is doing much toward paralyzing the business of the country. It is a proceeding which, we believe, will not be justified when fully investigated by the sober second thought of the American people.

Steel Exports a Real Factor

What constitutes easily the greatest gain ever made over previous records in steel exports was made in March, when the total of iron and steel exports exceeded by more than 60,000 tons the best previous record made in a month. Indeed, the 60,000 tons alone means a large tonnage, for in none of the three years 1901-2-3 were our total exports at as great a rate as 720,000 tons a year.

The March exports of tonnage lines amounted to 215,626 gross tons, the best previous month's record being 154,725 tons, made in November of last year. The items making up the total include scrap, pig iron, unfinished steel, rolled steel products, and pipe, wire, etc. Monthly exports in gross tons have been as follows since the beginning of last year:

	1910.	1911.
January	118,652	152,144
February	110,224	150,704
March	124,980	215,626
April	117,921	.....
May	135,306	.....
June	120,601	.....
July	128,060	.....
August	131,060	.....
September	118,737	.....
October	129,325	.....
November	154,725	.....
December	149,666	.....

It will be observed that there have been two sharp changes in the export movement, there being the sudden jump to a level of 150,000 tons a month, beginning with November last, and then the jump to over 200,000 tons in March. Prior to last November it was exceptional for a month to show more than 125,000 tons, but for the four months November to February inclusive the average exceeded 150,000 tons monthly, making a rate of 1,800,000 tons a year, while the March rate was more than 2,500,000 tons a year. Hitherto it has been a very good year which has shown as much as 1,300,000 tons, while last year proceeded for ten months at the rate of a little under 1,500,000 tons, the jump in November and December carrying the year's total well above that figure. Exports in gross tons by calendar years have been as follows:

1900	1,154,284
1901	700,857
1902	372,398
1903	326,590

1904	1,167,710
1905	1,010,255
1906	1,325,740
1907	1,301,979
1908	964,242
1909	1,243,462
1910	1,535,698

While it is possible that a portion of the sudden jump in March exports was due to the incident of a special rush to get material to Japan before the imposition of the new tariff which becomes effective July 17, there is no doubt that a permanent gain has been made. This is due, of course, to the vigorous policy of the United States Steel Corporation, which does not involve dumping material here and there at a sacrifice, but pushes the trade at each point for the last ton that can be made out of it at a profit, even though in some cases the profit is rather meager. As an instance of its aggressiveness, it has put its own tramp steamers into the service and has thus been able to fill many orders which otherwise would have been lost through inability to make the desired deliveries. In its mill practice, it makes export orders take precedence when this can be done without prejudicing domestic deliveries and when it is necessary to hold the foreign business. As an example of its facilities in this direction, it recently shipped a 5,000-ton export rail order during the two days following the entry of the order on the mill books.

Years ago, some fairly large iron and steel exports were made by the "dumping" process. Such exports chiefly comprised pig iron and unfinished steel, billets and sheet bars. Present day exports run much more to finished products. Since for five months the export trade has been at a much heavier rate than formerly, it will be interesting to observe the alignment. The totals for the five months November to March inclusive have been as follows, with the proportion of each:

	Gross tons.	Per cent.
Scrap	37,294	4.5
Pig iron	73,270	8.9
Billets, etc.	96,657	11.8
Rails	175,380	21.3
All other	440,264	53.5
Total	822,865	100.0

Of the "all other" products, the least finished is wire rods, of which there is only a small tonnage. The heaviest lines are sheets and plates, structural material, plain and fitted, pipes and tubes, and wire products, including barb wire, nails, etc.

NOVEL METHOD OF REGULATING DUTY.

Editor THE IRON TRADE REVIEW:

I believe the following is of greatest interest to the manufacturers in the United States in that it affords them an opportunity to regulate the duty on imported merchandise by an indirect but proper method. The iron and steel manufacturers are, of course, largely interested from a protection viewpoint, if not from a pecuniary viewpoint.

The board of United States general appraisers, at New York, recently rendered an opinion in what is probably the most important matter of general interest of which they took cognizance since their organization, namely their jurisdiction of customs disputes wherein importers claim that the government is not exacting a high enough duty upon imported merchandise.

For 50 years, at least, long before the board of United States general appraisers was in existence, congress granted the importers permission to object in writing to exactions of duty. They were strictly held to this right of protest and, as the objection was always that the assessment was too high, they lost their right of recovery if the protest was not lodged with statutory precision.

While the language of the particular section changed somewhat with tariff revisions, it was always substantially to the effect that within a certain time after the ascertainment of the duty by the government the importer might protest "if dissatisfied with such decision," and thereupon raise an issue to be tried out.

If the protest was not lodged within the statutory time, the right to any recovery was forever barred unless congress made special enactment allowing the recovery, which I do not think was ever done. The United States court of claims never granted relief, for it had no equity jurisdiction and as the importer failed to exercise this statutory right, this court did not entertain jurisdiction.

The method of granting relief upon protests changed from time to time as the circumstances warranted. Up to 20 years ago, the secretary of the treasury at Washington rendered the first ruling. Importers then went to the United States circuit court or district court, with a jury, then to the United States court of appeals, and from thence to the supreme court of the United States in certain cases.

The next change was to substitute the board of United States general appraisers for the secretary of the treasury and to omit juries in the circuit court.

Recently the United States court of customs appeals was created to hear appeals from the board of United States general appraisers instead of the other United States courts and that court was made the court of last resort.

But during all the time of protest and appeals no bona fide importer thought of claiming that the government charged him too little duty. Of the millions of protests decided all were to the effect that the government was exacting too much revenue. In other words, the "if dissatisfied with such decision" was taken to mean that the decision caused the citizen a higher taxation than was legally collectible, during all the years of granting relief in this regard. In fact, I do not think a protest claiming a higher rate of duty would have been entertained at all. It would have been dismissed as being frivolous.

Of late years in very rare instances, if the board of United States general appraisers really believed that the government classification for duty imposed was erroneous, the board sustained the protest, even if a claim at higher rate was made, although possibly in error. A year or so ago, THE IRON TRADE REVIEW published a report of such decision in a case of the Upson-Walton Co., Cleveland. But that was done only in clear cases and more as a lesson to importers to know what they were objecting to before making the objection.

Recently certain domestic manufacturers of cotton bagging determined to stop importations of cotton bagging composed of Russian Seg or similar merchandise from paying a low rate of duty as composed of jute. They made a test importation, paid the lower duty and duly protested, claiming the higher duty properly exactable. The government counsel insisted on the protest being dismissed, as this was not the "dissatisfaction" intended.

But this the board declined to do. It went into the merits of the case and found in favor of the contention of the domestic manufacturers. The government has appealed from this decision. But, as the decision is based upon sound reasoning, it is doubtful if it will be reversed.

The precedent thus established is that domestic manufacturers, if dissatisfied with the duty being taken upon regularly imported merchandise, may make test importations and cause an issue to be tried out. If they prevail, the government will have to take duty on the basis of the higher classification. Manufacturers need not wait for importers to claim lower rates and then help the government prove the higher rate (the rate assessed) is proper, as was heretofore done. They may begin at once in their endeavor to have the proper duty taken.

A case now before the board occurs to me. It is the lock nut of the Verona patent case. The importers claim the lock nuts are washers. The evidence on behalf of the government is that they are not and is made up entirely by testimony of domestic manufacturers from all over the United States. If the duty had been taken in the first instance as washers, the manufacturers could very easily have proved that lock nuts were not washers.

J. CHOPAK JR.

11 Broadway, New York, Apr. 27, 1911.

Contempt Bill Signed

The so-called contempt bill, providing that, in event of an injunction case in a labor dispute in Massachusetts, the defendant shall be tried by a jury instead of a judge, has been signed by Governor Foss. This is a very radical piece of legislation and it is feared that the effect of it will be unfortunate.

European Copper Stocks

Fortnightly statistics indicate that the European stocks of copper on April 30 decreased 1,610 tons, while copper supplies afloat increased 75 tons, making a net decrease in the visible supply of 1,535 tons to 77,539 tons, against 79,074 tons on April 15, and 110,210 tons on April 30, 1910.

The Tyler Furnace & Mfg. Co., Cleveland, whose incorporation with a capitalization of $10,000 was recently noted, will build shops in that city for the manufacture of an improved house heating furnace. The exact location for the works has not been decided, but it will be within the city limits. The company has organized by the election of these officers: President, L. R. Dunham; vice president, J. B. Corlett; secretary and treasurer, H. J. Probeck; general manager, E. W. Tyler.

The Johnson Service Co., Milwaukee, maker of motor cars and trucks, engines, motors, automatic heat regulators, clocks, etc., declared an annual dividend of 8 per cent at the annual meeting. A year ago the company increased its capital by $1,000,000 to provide for the extension of the automobile business.

National Legislation Along Employment Lines*

Operation of Eight-hour Law as Applied to Navy — Boast of Organized Labor

By Marshall Cushing

Toward the close of the session, when it appeared that the Moon codification bill, to about the middle of which consideration had proceeded, could not be passed at all if the house undertook to consider all the rest of it, Mr. Moon proposed that the bill be passed by the house with such house amendments as had been agreed to. It was immediately perceived by movers of the various anti-injunction amendments that this action would prevent a consideration of their pet propositions. Yet there were many features of the bill already considered which many members of the house desired to be enacted, and one Republican leader, knowing this, quietly but positively threatened the defeat of the whole bill unless it were passed by the house as it stood, doing his country a great service by that means, because the bill, if passed without further discussion, would be passed without any anti-injunction amendment. So it fell out. The Heyburn-Moon codification bill went to conference without any anti-injunction amendment by either branch, and section 249 (the statute), still reads:

Whenever notice is given of a motion for an injunction out of a district court, the court or judge thereof may, if there appears to be danger of irreparable injury from delay, grant an order restraining the act sought to be enjoined until the decision upon the motion; and such order may be granted with or without security, in the discretion of the court or judge.

It was noted early in the session that an additional impetus would be given to the familiar device of tacking eight-hour legislation upon appropriation bills. It was even predicted that this serviceable means of parliamentary indirection would be resorted to with much greater hope of success than ever before because of the fact that the president, unhappily, had recommended in his annual message that, instead of enacting the so-called radical eight-hour bills—the old McComas-Gradner-Borah affairs, which, at the very best, would result in confusion—the present eight-hour law (or 1892) be "enlarged" by providing that the words "public works" should be construed to mean, as Mr. Taft said, "not only buildings and work upon public ground, but also ships, armor, and large guns when manufactured in private yards or factories;" for presiding officers of the house and attorney generals had uniformly held that a battleship, for illustration, in process of construction at a private yard, was not a public work. The president proposed that there should be no doubt hereafter that it was a public work within the meaning of the statute.

Quoted President's Message.

The house made occasion on the first possible opportunity to take Mr. Taft at his word. When the customary items for "increase of the navy" were reached in the current naval appropriation bill, all the customary eight-hour amendments were promptly moved and agreed to, and one of their supporters quoted the president's message, as was quite natural. The naval appropriation bill of the year before had required that the two new battleships therein provided for (cost $12,000,000) should be built on a basis of the eight-hour law of 1892. When it appeared that this could not be done with the authorized limit of cost additional money had to be asked for in the next naval appropriation bill in order that the work might be completed, and it was voted, $400,000 for each vessel. The navy department sought to have this eight-hour provision, as applied to the construction of battleships, repealed, but a provision for this, reported favorably to the house by the naval affairs committee (Foss, of Illinois, chairman), received no serious attention. For a similar reason, two new revenue cutters, each at $250,000, authorized by special act a year ago, were found to be impossible of construction in private yards, because of the fact that no contractor would bid, being deterred by the same eight-hour provisions; and as if to tie the matter up still worse the house voted at the last session that these two revenue cutters should be constructed in a navy yard. But the senate, opposing too much paternalism, would not agree to that; so the treasury department is still without these much-needed vessels.

One word more here, touching the perplexities of executives and legislators who try, doubtless impossibly, to mix government business with private business—impossibly, because the effort to restrict the operations of the private business (seeking, on invitation, to do work for the government) must ultimately result in throwing all such work into the government yard or factory. In my annual report last November to our brother organization, the National Founders' Association, I quoted Attorney General Wickersham to the effect that the application of the eight-hour law of 1892, to the construction of battleships then lately provided for, was only to work done on the vessel at the ship yards; for evidently the law must apply either to all the work done on the vessel or only to that part of the work done at the yard. The eight-hour law of 1892 has invariably been construed by the courts as applying only to "public works" constructed upon property which is owned by the government, like public building sites, or over which it has complete jurisdiction, as in the case of river and harbor projects; the extension of the law to the construction of naval vessels or to the manufacture of armor plate and big guns was never contemplated by the framers of the law. The navy department, especially through Secretary Meyer and his constructors, has protested with great persistence and patriotism against any such extension of a statute as would be certain to tie their hands still further. Yet the last congress, having all these practical warnings before it, but having before it, too, the president's recommendation, immediately proceeded to put the government even deeper in the same hole. The eight-hour law of 1892 was applied seriatim in the last naval appropriation bill to two first class battleships, two colliers, eight torpedo boat destroyers, four submarine torpedo boats, and to some $900,000 of construction already authorized, on torpedo boats, and to additional construction and machinery, involving a cost of $13,000,000. The senate naval affairs committee amended the house bill so that the eight-hour law would apply only to the two battleships, but the senate amended back into the bill all of the house provisions. And there was no getting away from them, for they were to the effect that:

No part of the appropriation shall be expended for the construction of

*Extracts from report to National Metal Trades Association's convention at New York, April 12.

any boat by any person, firm or corporation, which has not at the time of commencement and during the construction of said vessels established an eight-hour work-day for all employes, laborers and mechanics engaged, or to be engaged, in the construction of the vessels named herein.

The Unions Boast.

Organized labor already boasts that this expansion of the naval program for the benefit of organized labor will assure to 23,000 union men an eight-hour day. High naval authorities tell us that it must surely cost the government $10,000,000 additional, if this eight-hour provision is put into effect practically.

It will be recalled that one of the bitterest fights of a year ago related to the so-called Hughes amendment to an item in the sundry civil appropriation bill. This amendment provided that no part of the sum appropriated would be used for the enforcement of the anti-trust laws against combinations of laboring men. It was only by the greatest difficulty, and with the support of all the friends of impartiality in the administration of our laws, from the president down, that this Hughes amendment was beaten. This year the same item appeared in the sundry civil bill, and it was expected that the same amendment would be moved by the same representative of organized labor on the floor. But Mr. Hughes (of New Jersey) seems not to have been present on the floor at the particular hour when the item in question was reached, and, as no arrangements appear to have been made with any other representative of organized labor to move the same amendment or a similar one, it happened, greatly to the surprise of nearly everybody, that there was no fight this year for the proposition to nullify the Sherman law, as it would apply to combinations of laboring men, by stopping the appropriation for its enforcement.

The Jobson-Gifford Co., 25 East Twenty-sixth street, New York City, has been incorporated, consolidating the interests of the Bowles-Gifford Co. and the Jobson-Hooker Co., for the continuance of the structural steel business formerly carried on by the original companies by the same personnel.

The Hooper-Falkenau Engineering Co., 165 Broadway, New York City, has been organized to take over the business of George K. Hooper, industrial engineer. Mr. Falkenau was formerly associated with the Falkenau-Sinclair Machine Co., Philadelphia, of which he was president for a number of years.

DEALERS ORGANIZE

Pacific Coast Association After Three Days' Conference.

The organization of the Pacific Coast Machinery Dealers' Association took place at a three-day conference held at San Francisco, April 20 to 22, inclusive, representatives from all parts of the coast being present. It is the intention of the organizers of the association to perfect an organization having for its object the firmer binding together of the machinery houses with a view to simplifying credits, effecting economies in management and the promotion of trade conditions generally. The local organizations involved are the Pacific Machinery Dealers' Association of San Francisco and Seattle, Portland and Los Angeles Machinery Dealers' Associations.

The first session opened in the assembly room of the Merchants' Exchange. A. L. Young, of the A. L. Young Machinery Co., of San Francisco, was chosen temporary chairman and John W. Berger, also of San Francisco, was selected temporary secretary. Committees on credentials and bylaws were appointed and the delegates adjourned to a banquet which took place at the Commercial Club in the evening. A. L. Young officiated as toastmaster, and the principal address was made by J. A. Herron, of the machinery firm of Herron, Rickard & McCone, who extended a welcome to the visitors, outlined the plans and objects of the proposed association and discussed trade conditions generally.

A. L. YOUNG
President of Pacific Coast Machinery Dealers' Association.

Permanent organization was effected on Friday and the following officers were elected: President, A. L. Young, San Francisco; vice president, Alexander Hamilton, of Caldwell Bros., of Seattle; secretary-treasurer, H. H. Tracy, of the Tracy Engineering Co., of San Francisco. An organization committee consisting of Charles Stallman, of the Pacific Tool & Supply Co., of San Francisco; O. A. Berger, of Berger & Carter, of San Francisco; Mr. Usher, of Smith, Booth & Usher, of Los Angeles; J. M. Arthur, of J. M. Arthur & Co., of Portland, and Alexander Hamilton, of Seattle, was appointed.

The Friday afternoon session was given over to discussions of traffic matters, terms and credits, consumers, machinery brokerage and undeveloped territory. The delegates later were taken for an automobile tour of the city and in the evening were the guests of the local organization at a theater party at the Columbia theater. On Saturday they made a trip to Mount Tamalpais, and on Sunday left for their homes.

The members of the organization committee are planning to visit the various cities of the coast for the purpose of securing the affiliation of the smaller bodies of machinery men with the general association.

File Catalogue

A catalog, unique for the elaborate and artistic manner in which the subject matter is handled, has just been issued by the Nicholson File Co., Providence, R. I. It is an 8 x 10½-inch, 96-page booklet, devoted to description and illustration of the 3,500 different kinds of files produced by the Nicholson company. The Nicholson company, incorporated in 1864, was the first concern in this country successfully to undertake to manufacture machine-made files. From an initial capacity of 300 dozen files per day, the works have been enlarged until a daily output of 1,500 dozen has been developed. The catalog, which has been issued for circulation to only such concerns as have use for it, is deserving of close attention.

The Cleveland Mining Co., which organized some time ago to develop a tract of zinc ore at Hazel Green, Wis., recently installed a mill and is now extracting ore at the rate of 15 tons an hour. The mine is being operated 20 hours a day, in two shifts. Operations will later be conducted on a bigger scale. The officers are: President, L. J. Wolf; vice president, A. O. Fox; secretary and treasurer, H. C. Lang. The headquarters of the company are in the Garfield building, Cleveland.

PURELY OPTIONAL

As to Both Employer and Employe in Wisconsin Act.

By the decisive vote of 69 to 13, the Wisconsin assembly has concurred in the workmen's compensation bill recently passed by the state senate. The measure will be ready for the governor's signature just as soon as the senate concurs in the "legislative intent" amendment, added by the assembly. Gov. McGovern has taken a decided stand in favor of the act, so it is expected that he will sign the bill. The law, when enacted, will not become generally operative until September 1, 1911.

The Wisconsin industrial insurance bill represents the work of two years by a special legislative committee and it includes provisions gleaned by thorough investigations in this country and in Europe. The legislative committee co-operated with similar legislative commissions from New York, Massachusetts, New Jersey, Ohio, Connecticut, Michigan, Minnesota and Illinois.

The Wisconsin measure differs from any other workmen's compensation bill thus far placed before an American legislature, in that it is entirely optional. The employer in any occupation who desires to stand on his common law rights and, in case of an accident to an employe, defend a suit for damages, may do so, according to his inclination. The employer who desires to pay the rates of compensation scheduled in the law has but to announce his decision to the industrial accident board, created by the act. In filing notice of election to pay the compensation scheduled he secures the advantage of practically safeguarding himself against being sued for damages for personal injury.

With the aim of making the law comply with the constitutional provisions, the legislative committee drafted the act so that the servants of an employer who elects to come under the law also elect to accept the scheduled compensation in case of injury. They do not do so by means of a written notice, but their inclusion in the scheme comes about automatically. The employe can also serve notice on his employer that he does not desire to accept the scheduled compensation and then can stand on his common law rights and bring suit in case of injury. When an employer elects to pay the compensation set forth in the act, his employes are given thirty days in which to file their notice of refusal to accept the rated compensation. If this notice is not filed within the given time, their acceptance is automatic.

The compensation features of the act are also optional. In one important particular the law affects all employment generally. This feature is the absolute abrogation of the assumption of risk defense and the fellow servant's negligence. The abrogation of the fellow servant defense, however, applies only to employers of four or more persons. There is an important exception to the general application of this abrogation of defenses. In order to give the employer the benefit of the old common law defenses in cases where an employe refuses to accept the compensation after his employer's election, the law sets forth that the abrogation clause shall not apply to employers who elect to pay the scheduled compensation.

Although the act is optional in dealing with employers of labor, it is compulsory as regards the state, counties, cities, towns, villages and school districts.

In regard to the rates of compensation, the Wisconsin act provides that in case of death of the employe, the measure provides payment of four times the annual wage with a maximum of $3,000 and a minimum of $1,500, if total dependents survive. In case of injury to the employe, he is to be paid 65 per cent of his wages during the period of total disablement. When the injury does not disable the employe so as to prevent his working, he is to receive 65 per cent of his loss in wages. When partial dependents survive a deceased employe, these partial dependents are to receive four times 65 per cent of the annual amount devoted to partial dependents before the death of the employe. When the employe is totally disabled and so helpless as to require the services of a nurse, the weekly compensation is to be 100 per cent of his wages for three months. At the end of three months, it is to drop to 65 per cent.

The act creates the industrial accident board for the administration of its provisions. Three members make up this board, one of them to be the commissioner of labor, ex-officio. The terms of the other two members are to be four years and their salaries $5,000 annually. Every dispute or controversy under the act is to be submitted to this board, which is required to hold hearings and make investigations much in the same manner as does the railroad rate commission.

British Iron Market

Raw Material Market is Facing Difficult Situation.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., April 22.

The raw material market is passing through very trying experiences, with continual fall in price and vanishing profits. The first recovery reported for some time has been shown during the past few days in the Cleveland district. After a fall of nearly 3s per ton, there has been a slight recovery and there were numerous transactions yesterday of No. 3 iron on the basis of 46s 7½d ($11.43) cash, while today the price is up to 46s 9d ($11.46). Even now there is little disposition to buy forward, but the signs are more favorable. The shipments are better than for some months past. It seems likely that by the end of the month they will have reached 120,000 tons. The exports for the 20 days reached 84,110 tons against 59,272 tons last month. Stocks are not increasing so rapidly as of late, but the amount reaching 590,000 tons. The hematite market is very much depressed, with mixed numbers selling at 63s ($15.42) for east coast material, while on the west coast warrants can be had at 63s ($15.42) for three months transactions, and 62s 6d ($15.30) second hands. Consumers have forced down the price of rubio ore from 22s 6d to 21s 6d, and, at this price, some sales are being effected.

In the finished department orders are decidedly slow, but prices have not given way to the same extent as for pig iron, partly because there was less January boom and, therefore, not quite the same scope for the swing of reaction. The price of bars keeps up fairly well. The competition is keener for galvanized sheets, and, in this line, British makers are meeting America more generally in the open market. A large quantity of common Belgian iron continues to find its way into the Birmingham district for nut and bolt material, fencing and similar common uses. The steel market is hardly as strong as it was, and it seems evident that the large influx of bars and billets has at last affected British prices, which are now about half a crown lower than they were.

Jones & Laughlin Steel Co. announces the removal of its New York city sales department on May 1 from the St. Paul building, 220 Broadway, to the City Investment building, 165 Broadway.

EDUCATORS

Will Hold Annual Convention in Pittsburg in June.

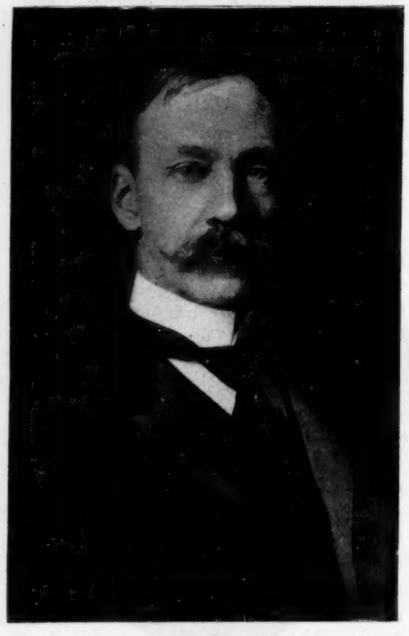
The annual convention of the Society for the Promotion of Engineering Education, will be held in Pittsburg, June 27, 28 and 29. The Society has accepted the invitation extended by the faculty of the Carnegie Technical schools to use the facilities of the schools for headquarters and meetings. Dr. John H. Leete, dean of the Engineering school at the Carnegie technical schools is chairman of the committee on arrangements. The membership of the society is composed of representatives of the faculties of practically every technical school and state university in the country, as well as a large number of practicing engineers. The officers of the Association are; President, Prof. Arthur M. Talbot, University of Illinois; vice president; Prof. M. S. Ketchum, University of Colorado; secretary, Prof. Henry H. Norris, Cornell University.

Making Wire Cloth of Finest Mesh

The Newark Wire Cloth Co., Newark, N. J., was incorporated recently with a capital stock of $50,000 by John Campbell Jr., formerly president and general manager of the American Wire Cloth Co., of Harrison, N. J.; William J Davis, president of the West Hudson County Trust Co., of Harrison, N. J., and Albert H. Stephens, formerly superintendent of the DeWitt Wire Cloth Co.'s works at Belleville, N. J. The officers of the company are: President, John Campbell Jr.; treasurer, Leggett C. Campbell; secretary, Albert H. Stephens. John Campbell, it is announced, has succeeded in perfecting a process for making the finer grades of wire cloth on power looms, reducing the price of such wire cloth to a figure below that of the hand product, and producing grades believed to be superior in workmanship and durability and uniformity. Previous to this time, it had been regarded by the trade as impossible to produce on power looms meshes as fine as 80, 90 or 100, the latter being the finest yet produced in this country, even on the hand loom. While dealing in everything in the way of wire, it is the aim of the Newark company particularly to develop facilities for the manufacture of the finer grades of wire cloth, and to meet satisfactorily the most exacting demands for the product.

Death of Alexander E. Brown

Alexander E. Brown, president of the Brown Hoisting Machinery Co., died at his home in Cleveland, on April 26, from a stroke of apoplexy, having suffered two shocks during the past year. He was born in Cleveland in 1852, the son of Fayette Brown, who about that time or a little later began to pay some attention to the development of the iron resources of the Lake Superior country. It was therefore quite natural that Alexander E. Brown as he grew to manhood should be attracted to the mechanical problems involved in the handling of ore. He attended the Brooklyn Polytechnic Institute, specializing in mechanical and civil engineering. He joined the Hayden geological



ALEX. E. BROWN

survey in 1872 and upon his return from the west became connected with the Massillon Bridge Co., Massillon, O. He later associated himself with his father and attacked the problem of ore handling on the great lakes. The ore trade, now one of the largest single trades in the world, was at that time just beginning to expand, and the problem of getting the ore out of the vessel was a vexatious one. Mr. Brown invented a machine which served the combined purpose of hoisting and conveying to storage, greatly lessening the time of unloading. At one time the Brownhoists were handling 90 per cent of the ore on the lakes. The business grew rapidly and Brownhoists were installed in all countries for the handling of bulk material.

Mr. Brown was a member of the American Society of Mining Engineers, the Engineers' Club of New York, the Cleveland Society of Civil Engineers and the Union and Country clubs.

In 1874, Mr. Brown married Miss Caroline Barnett, daughter of the late Gen. James Barnett. He is survived by a daughter, a son, Alexander C. Brown, two sisters, Florence C. and Mary L. Brown, and one brother, Harvey H. Brown.

Foreign Rail Trade

The only order placed during the last few days is for 1,000 tons of 50's for the South Indian Railway, which has gone to the West Coast. A few new inquiries are now before makers, chief amongst them being the following: 7,000 tons of 67's for British Columbia, 5,000 tons of 70's and 75's for Portugal, 8,000 tons of 60's and 70's for Vancouver, and 6,000 tons to 7,000 tons of 50's and 80's for South Australia. An inquiry is also expected from Queensland. It is doubtful whether any of the Canadian inquiries before makers will result in business here. The Norwegian State Railways have submitted to the legislative authorities a proposal to replace the existing rails, weighing 50 pounds a yard, by rails weighing 70 pounds a yard whenever any permanent-way renewals are in contemplation, and also in the case of any new constructional work. —*The Ironmonger*, London.

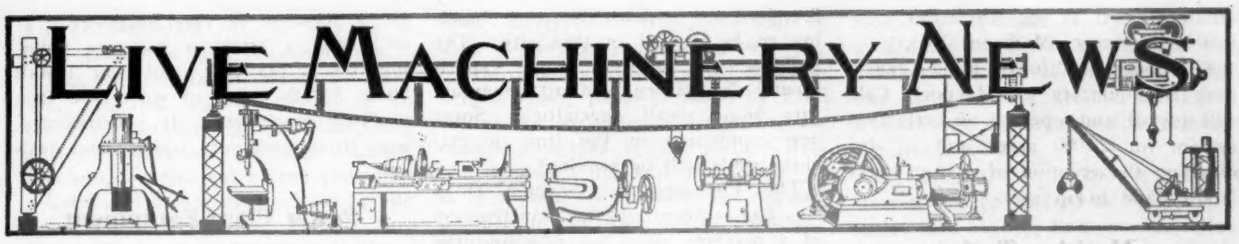
New York Copper Exports

Copper exports for the week ending April 27 showed 4,287 tons, an increase of 1,199 tons; April 1 to April 27, 27,037 tons, an increase of 14,615 tons; Jan. 1 to April 27, 99,486 tons, an increase of 15,164 tons.

Plant is Abandoned.—All the spelter furnaces of the plant of the New Jersey Zinc Co. at South Bethlehem, Pa., have been shut down and the plant there is to be discontinued. The employes of this plant are being transferred to the new works of the company at Palmerton, Pa. The company has not yet determined what disposition to make of its Bethlehem site and a statement that it will be sold to the Bethlehem Steel Co. is not authentic. The blast furnace of the company at South Bethlehem will probably never again be operated.

The Butte Coalition Mining Co. has declared the regular quarterly dividend of 25 cents a share, payable June 1.

LIVE MACHINERY NEWS



Conditions in the principal machinery markets of the country have been noticeably stimulated by the appearance of a number of lists of specifications for machine tools. The most important of these, and the one which has had the widest distribution, is that submitted by the American Steel & Wire Co. It is the most important inquiry of the year, the list calling for between 75 and 100 machine tools which have an estimated total value of over $100,000. In New York, no important new business, with the exception of the above list, has appeared. The American Bank Note Co. has partially closed on a large inquiry submitted some time ago. Railroads still fail to take advantage of the low prices prevalent in the New York market. In Pittsburg, current business is light and indications at present are that much proposed new business will be held up indefinitely. In Cleveland, the amount of small business transacted has shown a healthy increase. Several lists are out in that district: The Lake Shore railway is inquiring for 10 tools, the Wheeling & Lake Erie for seven, and some smaller specifications, as well as inquiries which are expected to appear soon, make the situation appear brighter than for months past. In Chicago, the Illinois Central railroad has submitted a list calling for 14 tools. In that section the general machinery business is fair, while bookings for machine tools are light. In Louisville, the Louisville & Nashville railway has made some awards on equipment for its shops at Boyles, Ala., and Decatur, Ala. A slight improvement is noted on the Pacific coast.

Railroads

Owing to a fire which damaged the shops of the T. A. & G. railroad at Akron Park, Tenn., it is reported that the company will replace them with a larger plant. The chief loss was in the car repair and blacksmithing departments.

The Louisville & Nashville railway will make some improvements to its car repair shops at Frankfort, Ky. They will be maintained in connection with the Kentucky Highlands railroad, recently taken over by the Louisville & Nashville.

New Works

The Buffalo Bolt Co., is extending its plant by the erection of an additional building.

The Hancock Mfg. Co., Charlotte, Mich., maker of lubricators, will erect a new factory building.

The Yale & Towne Co., Stamford, Ct., will establish a Canadian branch at St. Catherines, Ont., Can.

The Alvey-Ferguson Co., Louisville, Ky., announces that it will move its plant to Cincinnatti in the near future.

Benjamin F. Ward, Minneapolis, will establish a plant to manufacture the Ward binder attachment in Saskatoon, Sask., Can.

Contract for the International Harvester Co.'s new central plant at Springfield, O., has been awarded to Ciift Wise, that city.

George A. Baughan, formerly of New York, is planning to erect a factory for the manufacture of plumbing and engineering goods at Petaluma, Cal.

The Atlas Steel Casting Co., Buffalo, will soon begin on the construction of a plant for the manufacture of all kinds of open-hearth steel castings.

The Olds Motor Works, Lansing, Mich., is about to erect a three-story and basement structure, 74 x 758 feet. The new building will be used as the assembling department.

The Racine Malleable & Wrought Iron Co., Racine, Wis., has purchased three adjoining lots to provide room for future extensions. No definite plans have yet been formed.

The Tyler Furnace & Mfg. Co., recently incorporated, plans to erect a plant in Cleveland. An improved house heating furnace will be manufactured. E. W. Tyler is general manager.

The Jungers Stove & Range Co., Grafton, Wis., has commenced construction on a new plant in which stoves, ranges, heaters, etc., will be manufactured. The plant is expected to be completed by Sept. 1.

Haskell & Barker Co., Michigan City, Ind., has acquired five acres in that city and will establish a plant for the manufacture of steel cars. The cost is estimated at $1,250,000. The company now manufactures wooden cars exclusively.

The Johnston Harvester Co., Batavia, N. Y., controlled by the Massie-Harris Co., Toronto, Can., is having two buildings erected, each approximately 70 x 500 feet. They will be used for increasing the capacity of the malleable iron department.

The Racine Malleable & Wrought Iron Co., Racine, Wis., has purchased three lots adjoining its present plant, which will be used for extensions and additions. The new construction will not be commenced until late this year or early next year. No definite plans have been made.

The Aluminum Goods Mfg. Co., Manitowoc, Wis., is inaugurating improvements which will cost approximately $75,000. The new work includes a main building, 43 x 300 feet, three stories; a power house, 40 x 60 feet, to be equipped with machinery to develop 500 horsepower.

William M. Zimmerman, Dayton, O., is organizing the Zimmerman Boiler & Tank Works. A works site has been purchased and building will be commenced on two structures, one 20 x 40 feet, and the other, 12 x 30 feet. A three-bay, steel structure, 90 x 180 feet, will be erected later. Various sheet-iron products will be manufactured and boilers will be repaired.

Water Works

The city of Pendleton, Ore., will vote on a $200,000 bond issue for the installation of a gravity water system on May 9.

L. Stannard, of Stannard & Richardson, Portland, Ore., is working on plans for a municipal water works to supply both Marshfield and North Bend, Ore.

The village of Monticello, Wis., is in the market for a power pump for water works service. Details may be

obtained from W. G. Kirchoffer, consulting engineer, Madison, Wis.

The Central California Land Agency, with headquarters at Macdoel, Cal., will install and operate an irrigation system for 23,000 acres and is also planning the erection of a beet sugar factory and hemp mill.

Machine Tools

The Superior Gas Engine Co., Springfield, O., is building an addition to its plant and is in need of some additional equipment.

It is reported that the Quinlan Boiler Co., Indianapolis, which has just completed a new boiler shop, will shortly add a machine shop.

A 600-pound and a 2,000-pound steam hammer are wanted by the Henry Vogt Machine Co., Louisville, Ky., for installation in the forging department of its boiler plant.

The Wheeling & Lake Erie railroad has before the trade a list calling for seven large machine tools for installation in its shops at Brewster, O. It is not known when awards will be made.

The Sherwin-Williams Co., Cleveland, which is having its engineering department draw plans for a new can making plant to be erected in that city, is understood to be taking prices on the presses and other necessary equipment.

The Advance Machine Tool Co., Milwaukee, recently incorporated, will succeed to the business of William Steinbach & Sons, 591 Twenty-second street, that city. No additions are contemplated but some machinery and tools will be needed at once.

Eugene R. Liebert, architect, Colby-Abbott building, Milwaukee, has taken bids on the construction of a machine shop to be erected on National avenue, for the National Machine Co., now located at 660 Washington street, Milwaukee. Some new machine tools will be required.

The Canadian Steel Foundries, Ltd., Welland, Ont., is planning to install additional machinery in its rolling mill and steel foundry, and advises that it will be glad to receive catalogs on all supplies that it might use, for the use of its newly established purchasing department.

Contract has been let for a four-story building, 74 x 136 feet, for the Hydraulic Pressed Steel Co., Cleveland. It will be used as a machine shop. Considerable special machinery will be required. It is understood that some of the equipment has already been contracted for.

The Dayton Engineering Laboratories, Dayton, O., is having plans prepared for a new four-story building to be erected in that city. The building will be used as an experimental laboratory and to manufacture some small specialties. Some new equipment in the line of machine tools will be required.

The Pittsburg & Conneaut Dock Co. has authorized the construction of a machine shop for repairing the ore-handling machinery on Union dock, Ashtabula, O. It is understood that a list of specifications for the required machinery is being prepared by J. E. Savage, dock superintendent, Pittsburg & Conneaut Dock Co., Ashtabula.

The Lake Shore & Michigan Southern Railroad Co., which recently authorized the construction of a machine shop at Ashtabula, O., has issued a list of 10 large machine tools. The equipment is designed for repairing the ore-handling machinery on Superior No. 1 dock at Ashtabula. It is understood that awards will not be made immediately.

The Cleveland Foundry Co., Cleveland, which recently let contract for a large addition to its plant, advises that the new plant will be used to increase the output of stoves. Although the list of specifications for the necessary machinery has not yet been completed, it is announced that pressing, shearing and stamping machines, etc., will form the greater portion of it.

The Illinois Central railroad, through its Chicago office, is asking for bids on the following machine tools:

One 600-ton wheel press.
One 72-inch radial drill.
Two 2-inch pipe cutters.
Two 2-inch bolt cutters.
One 48-inch milling machine.
One cold saw.
One 1½-inch bolt header.
One 36-inch by 12-foot engine lathe.
One 24-inch by 10-foot engine lathe.
Four 20-inch by 8-foot engine lathes.
One 30-inch by 12-foot engine lathe.
One crank shaper.
One air compressor.
One set straightening rolls.

The American Steel & Wire Co., through its purchasing agent, E. E. Stone, Cleveland, has issued a list of some 75 to 100 machine tools. Most of the equipment specified is for replacement purposes and most of the plants of the company are represented in a greater or lesser degree; no equipment for the Corey, Ala., plant is included. No time has yet been set for making the awards. The amount involved is estimated as being considerably in excess of $100,000.

Myers Pump & Mfg. Co., 222-26 South Seventh street, St. Joseph, Mo., which was recently incorporated, will manufacture automatic stock pumps, irrigating and mining pumps, gasoline engines and other farm appliances. It has not as yet decided just where it will locate its shops but is looking for a location in the Southwest. It will erect a brick or concrete building, 60 x 125 feet, and will install about $6,000 worth of wood and iron working machinery. It solicits catalogs from machinery makers and dealers.

Power Plant Equipment

The Keystone Electric Light Co., Union City, Pa., is planning to erect an electric lighting plant.

The municipal electric lighting system at Kingfisher, Okla., is to be changed from single to three-phase.

The citizens of Longmont, Col., have voted a bond issue of $46,000 for the construction of an electric light plant.

Sentinal, Okla., has voted a bond issue for the construction of a lighting plant. T. Murch, Clinton, Okla., is the engineer.

Colquitt, Ga., will construct a municipal electric lighting plant at an estimated cost of $75,000. P. E. Wilkin is mayor.

James O'Brien, Jackson, Cal., will install a hydro-electric plant for developing current for power, light and irrigation purposes.

The Southern Power Co., Durham, N. C., is planning to erect a steam power plant, estimated to cost $250,000, in the near future.

The citizens of Hastings, Mich., have voted a bond issue of $120,000, for the construction of a hydro-electric plant. James M. Patten is city clerk.

James H. Patten, city clerk, Hastings, Mich., advises that the citizens have voted to issue $120,000 bonds for the construction of a hydro electric plant.

Sam D. Jones, business director of the board of education of Louisville, Ky., has announced that four schools are to be equipped at once with steam heating system.

The state board of control, Olympia, Wash., will receive bids about May 20, for the construction of a power plant at the Veterans' Home, Port Orchard, Wash.

Bids will be received by the City of Anaheim, Cal., for a generating set for the municipal light and water works until May 11. Edward B. Merritt is city clerk.

The city of Mankato, Minn., is in the market for a new 125-horsepower, horizontal boiler with internal furnace. The boiler is to be designed for 150 pounds steam pressure.

The new city hospital, Louisville, Ky., will be served by its own heating and light plant. The latter will be of sufficient capacity to serve five buildings. The cost of the hospital

will be $1,000,000. D. X. Murphy & Bro., Louisville, are the architects.

The Steelton Light, Heat & Power Co., Steelton, Pa., is preparing to erect an auxiliary power plant, and a new substation. Samuel Canffer, Steelton, is president of the company.

Estimates are being received by the Pennsylvania Light & Power Co., Pittsburg, for a 500-kilowatt low-pressure steam turbine and other equipment for the enlargement of its plant.

Individual motors are to be installed in the new plant of the Louisville *Herald,* plans for the erection of which have been announced. Thomas & Bohne, Louisville, Ky., are the architects.

The electric power plant of the Proctor Coal Co., Williamsburg, Tenn.-Ky., is to be enlarged in order to supply power for the haulway and mining machinery which the company plans to install.

The state commission in lunacy, Albany, N. Y., will receive bids until May 10, for one direct-connected engine and alternating current generator. T. E. McGarr is secretary of the commission.

It is expected that contract for the construction of a power-plant will be let in the near future by the Lincoln Institute, which is being established near Simpsonville, Ky. A. E. Thompson, Berea, Ky., is in charge.

Heating and power equipment will be installed in the new 18-story office building of the Inter-Southern Life Insurance Co., Louisviile, Ky. The building will have five elevators. B. B. Davis, Louisville, is the architect.

Bids will be received until May 8, by the governor of Maryland, Union Trust building, Baltimore, for the construction of a power plant at the Springfield State Asylum. Parker, Thomas & Rice, Baltimore, are the architects.

The Blue Ridge Power Co., Cartersville, Ga., is contemplating the construction of a dam and power plant to develop 30,000 horsepower. J. J. Spalding, Atlanta, Ga., and William A. Carlisle, Gainesville, Ga., are interested.

The W. H. McElwain Co., operating a number of factories at Manchester, N. H., will, in the near future, construct an electric generating station of sufficient capacity to operate these shops. The estimated cost of the plant is $250,000.

A concrete dam is being built across Elkhorn creek, in Eastern Kentucky, by the Consolidation Coal Co., Baltimore, which is developing a large tract of coal land in that section. A hydro-electric plant will be built to develop the water power.

The Home Brewing Co., Milwaukee, is having plans prepared by Fred Gatterdam, architect, Chicago, for extensive additions to its plant. Bids will be taken on and after May 15. A complete equipment of engines, pumps, boilers and other machinery will be required.

Bids will be received until May 9, for one 750-horsepower boiler, feed water heater and receiver, to be delivered to the United States penitentiary at Leavenworth, Kas. Detailed information regarding this machinery may be obtained from R. V. Ladow, superintendent of prisons, Washington, D. C.

Albert E. Skeel, architect, 1028 Rose building Cleveland, is about to let contract for a large building to be erected for the Otis Lithographing Co., that city. The latter concern is considering a change in its operating power and may be in the market for some ten new motors of various capacities.

Architect William S. Lougee, American Trust building, Cleveland, is taking estimates on one 150-kilowatt generator and one 75-kilowatt generator, both to be installed in the new William Edwards warehouse, that city. Estimates on a second generator of 150 kilowatts will be taken later.

The Cedar Rapids & Iowa City Railway & Light Co., Cedar Rapids, Ia., expects to purchase a 3,000 or 2,000-kilowatt turbine and an 800-kilowatt generator to be direct-connected to a compound condensing engine. The company also intends to buy a 500-kilowatt, 60-cycle, two-phase rotary converter.

The Yadkin River Power Co., Raleigh, N. C., capitalized at $4,000,000, has taken over the plant of the Rockingham Power Co. President Charles E. Johnson of the Yadkin Co., states that big developments are to be gotten under way by the allied interests. A large transformer station is one of the proposed improvements.

The Turner Construction Co., 11 Broadway, New York, has been awarded the contract for the construction of a reinforced concrete, combined warehouse and power-house, for the Great Atlantic & Pacific Tea Co. The building will be 60 x 97 feet, six stories, and will be erected at Bay and Provost streets, Jersey City, N. J.

Plans for the erection of a $500,000 power house for the operation of traction properties in central Kentucky have been completed by the Kentucky Traction & Terminal Co., which has been formed for the purpose of taking over the electric railway lines in and around Lexington. The change in organization becomes effective May 17.

A building, 50 x 100 feet, eight stories, will be erected at Sixty-fourth street and West End avenue, New York, for accommodating automobile manufacturers and repair men. Two automobile elevators will be be installed, and an air compressor plant provided in the basement. The Libman Contracting Co., 1968 Broadway, has been awarded the building contract.

The general contract for erecting the Woolworth building, Park Row and Broadway, New York, has been let to the Thompson-Starrett Co Specifications on a considerable amount of power equipment for installation in the building are expected to follow soon. Official advice, however, is that the plans are not yet ready. Chas. Gilbert, 11 East Twenty-fourth street, is the architect.

Bids will be received until May 15, at the office of the Reclamation Service, Los Angeles, Cal., for a steam power plant for the Rio Grande Project, N. M. and Tex. Three 625-kilo-volt-ampere steam turbo-generator units, two steam turbine driven exciters controlling switchboard, three condensers, four water tube boilers, two boiler feed pumps, one feed water heater, etc., are included in the specifications.

Miscellaneous

The German & Los Angeles Syndicate, which recently acquired a number of mining properties at Redding, Cal., will install modern machinery and a large cyanide plant.

Sealed bids will be received until May 10, by the board of public works of San Francisco, for the construction of the shop building for the proposed Polytechnic High school, that city.

The board of education of Santa Monica, Cal., will soon advertise for bids for the construction of a Polytechnic high school to cost $140,000; H. C. Holwedel is supervisor of construction.

Contracts are to be let in the next few weeks by the Kentucky Electric Co., of Louisville, Ky., for a 50-ton crane and a 250-foot steel stack, 12 feet in diameter. The company has announced that it will spend $750,000 on its plant this year.

Henry C. Allen, city engineer, Syracuse, N. Y., advises that the city is

asking for competitive designs and estimates of cost on the construction of a proposed vocational high school. The city has not yet made an appropriation for the school.

Government News

Gun Contracts.

The contract for furnishing 20 14-inch guns for the battleships New York and Texas, now under construction at the Brooklyn navy yard and the plant of the Newport News Ship Building Co., respectively, have been awarded as follows: Midvale Steel Co., two guns; Bethlehem Steel Co., two guns; the remaining 16 to be divided between the Watervliet arsenal and the naval gun factory at Washington. Immediateiy after the opening of bids on Dec. 3, the secretary of the navy applied to the war department for quotations in an endeavor to secure a lower price than the $74,900 and $74,770 per gun quoted by the Midvale and Bethlehem Steel companies, respectively. Although the estimate of the army is not known, it is probable that in dividing the award the navy department is pursuing its usual policy, which aims at keeping as many as possible of the ordnance manufacfacturers ready to make war materials in an emergency.

Contract for Forgings.

The contract for furnishing 20 sets of steel gun forgings and five sets of breech forgings for 3-inch guns for the ordnance department, U. S. Army. has been awarded to the Bethlehem Steel Co.

Bids to be Invited.

Bids will shortly be invited by the bureau of supplies and accounts, navy department, Washington, as follows:

Until May 16:—Anchors aggregating 23,400 pounds, for delivery at various eastern navy yards, schedule 3534; 575 barrels Portland cement, Washington, schedule 3527; 50,000 pounds fire clay, Norfolk, schedule 3538; 40 crucibles without covers, Norfolk, schedule 3538; 2,870-pound recoil cylinder, Washington, schedule 3530; four solid cast steel frogs, Boston, schedule 3527; annual supply of boiler gaskets, various, schedule 3173; 9,500 feet air hose, Norfolk and Philadelphia, schedule 3536; four 10-horsepower motors, Philadelphia, schedule 3531; 6,000 feet phosphor bronze wire rope, Norfolk, schedule 3534; 5,200 feet plow steel rope, Washington, schedule 3529; 50 gross hack-saw blades, Brooklyn, schedule 3534; 2,500 pounds steel bolts and nuts, Charleston, schedule 3534; nine worm-geared chain blocks, Norfolk, schedule 3534; 28 differential blocks, Norfolk, schedule 3534; miscellaneous brass squirt cans, Norfolk, schedule 3538; 20 pneumatic chipping hammers, Norfolk, schedule 3534; 600 padlocks, Norfolk, schedule 3534; 2,600 pounds steel rivets, Charleston, S. C., schedule 3534; miscellaneous hand tools, Brooklyn, schedule 3534; 48 steel wheelbarrows, Norfolk, schedule 3534; 23,700 pounds brass rod, Washington, schedule 3529; 38,800 pounds bronze rod, Washington, schedule 3529; 26,200 pounds steel castings, Washington, schedule 3530; 125,000 pounds ingot copper, Washington, schedule 3529; 3,000 pounds sheet lead, Charleston, S. C., schedule 3535; miscellaneous half-and-half solder, Charleston, S. C., schedule 3535; 34,800 pounds cold-drawn steel, Washington, schedule 3530; 94,500 pounds hot-rolled or forged steel, Washington, schedule 3530; 30,000 pounds forged steel, Washington, schedule 3530; 37,000 pounds machine steel, Washington, schedule 3530; 33,000 pounds nickel steel, Washington, schedule 3530; 18,000 pounds plate steel, Charleston, S. C., schedule 3535; 3,000 pounds galvanized sheet steel, Charleston, schedule 3535; 896 tin sheets, Norfolk, schedule 3535; 105,000 pounds zinc boiler plates, Brooklyn, Philadelphia and Portland, schedule 3537; 65,000 pounds slab zinc, Norfolk and Philadelphia, schedule 3537.

Until May 23:—One molding machine; one rod and dowel machine and one shaping machine, delivery at Charleston, S. C., schedule 3540.

Until May 31:—32,800 pounds steel angles, delivery at Bremerton, Wash., schedule 3544; 168,000 pounds bar steel, Mare Island, Cal., schedule 3544; 194,000 pounds steel plates, Bremerton, schedule 3544; 7,950,000 pounds medium steel plates, Mare Island, schedule 3544; 46,000 pounds medium steel plates, Mare Island, schedule 3544; 2,915,000 pounds steel shapes, Mare Island, schedule 3544.

Until June 6:—One boring, drilling and milling machine, Mare Island, schedule 3541.

Navy Supplies.

Bids opened at the bureau of supplies and accounts, navy department, Washington, April 25, were as follows:

STEEL RAILS—36 tons 70-pound steel tee rails ready for laying, and 60 pairs standard angle bar joint splices.—Carnegie Steel Co., Philadelphia, $1,666.44, $1,628.88 and $1,602; R. W. Geldhart, New York, $1,739; R. C. Hoffman & Co., Baltimore, $1,797; Seattle Frog & Switch Co., Seattle, $1,689; Ernest Wiemer Co., New York, $1,681.80.

SWITCHES, FROGS, ETC.—Seven split switches, standard gage; seven frogs; 14 8-foot, 70-pound guard rails; two 16-foot, 70-pound guard rails, and one 90-degree railroad crossing with guards of 70-pound A. S. C. E. rail.—Ajax Forge Co., Chicago, $661.75; American Frog & Switch Co., Hamilton, O., $699.20; Carnegie Steel Co., Philadelphia, $765; R. W. Geldhart, New York, $721.85; R. C. Hoffman & Co., Baltimore, $855.80; Nelson Iron Works, Seattle, $812.50; Seattle Frog & Switch Co., Seattle, $668.15; Ernest Wiemer Co., New York, $725.20.

FIRE CLAY.—275 barrels, 250 pounds per barrel, fire clay.—W. W. Clark & Sons, Baltimore, $2,915; A. S. Carmen, Selby, Cal., $3.65, $2.25 and $12.50 (per ton); Gladding, McBean & Co., San Francisco, $2.85; Steiger Terra Cotta & Pottery Works, San Francisco, $1.45 and $1.50.

ELECTRIC CRANE.—Furnishing and installing one 125-ton electric traveling crane at navy yard, Charleston, S. C.—Alfred Box & Co., Philadelphia, $4,744; Cleveland Crane & Engineering Co., Wickliffe, O., $5,743; Manning, Maxwell & Moore, New York, $6,035; Morgan Engineering Co., Alliance, O., $6,595; Niles-Bement-Pond Co., New York, $5,195; Northern Engineering Works, Detroit, $5,975; Whiting Foundry Equipment Co., Harvey, Ill., $6,000.

ELECTRIC CRANE.—Furnishing and installing one 20-ton electric traveling crane at navy yard, Charleston, S. C.—Alfred Box & Co., Philadelphia, $3,286; Cleveland Crane & Engineering Co., Wickliffe, O., 3,843; Manning, Maxwell & Moore, New York, $4,448; Morgan Engineering Co., Alliance, O., $4,575; Niles-Bement-Pond Co., New York, $3,875; Northern Engineering Co., Detroit, $4,080; Whiting Foundry Equipment Co., Harvey, Ill., $4,300.

ENGINE LATHE.—One motor-driven, double back-geared engine lathe, 30 inches x 26 feet 3 inches.—American Tool Works Co., Cincinnati, $2,961 and $3,081; Fairbanks Co., Washington, $2,936; Frevert Machinery Co., New York, $2,512; Griscom-Spencer Co., New York, $2,765; I. R. Johnson Jr., Philadelphia, $2,701; J. P. Kemp, Baltimore, $3,115; R. H. LeBlond Machine Tool Co., Cincinnati, $3,221.25; Manning, Maxwell & Moore, New York, $3,000, $3,167 and $3,265; Niles-Bement-Pond Co., New York, $2,850.

ENGINE LATHE.—One geared-head engine lathe, 6 feet x 16 inches, motor driven.—Fairbanks Co., Washington, $1,440; J. P. Kemp, Baltimore, $1,424; R. H. LeBlond Machine Tool Co., Cincinnati, $1,262.75 Manning, Maxwell & Moore, New York, $1 630; Niles-Bement-Pond Co., New York, $1 618, $1,575 and $1,535; Springfield Machin Tool Co., Springfield, O., $1,200.

DRILLING MACHINE.—One horizontal boring and drilling machine, 46 inches, motor driven.—Fairbanks Co., Washington, $1,995; Lucas Machine Tool Co., Cleveland, $2,115 and an alternate of $2,140; Niles-Bement-Pond Co., New York, $1,395; Prentiss Tool & Supply Co., New York, $1,323, $1,473, $1,358, $1,458, $1,389 and $1,489.

BORING MILL.—One 51-inch boring and turning mill, motor driven.—Gisholt Machinery Co., New York, $3,585; J. P. Kemp, Baltimore, $2,700; Manning, Maxwell & Moore, New York, $3,045, $3,075 and $3,075; Niles-Bement-Pond Co., New York, $2,340; Bullard Machine Tool Co., Bridgeport, Conn., $2,765.

RADIAL DRILL.—One motor-driven 5-foot radial drill.—American Tool Works Co., Cincinnati, $1,886, $1,937 and $2,012; Fairbanks Co., Washington, $1,817; Frevert Machinery Co., New York, $2,045; Griscom-Spencer Co., New York, $1,833; J. P. Kemp, Baltimore, $2,070; Manning, Maxwell & Moore, New York, $1,699; Niles-Bement-Pond C., New York, $1,395.

STEEL TUBES.—23,696 pounds commercial steel tubes as specified.—National Tube Co., Pittsburg, $5,289.44 and an alternate of $1,098.

SHEET STEEL.—12,500 pounds galvanized sheet steel.—Berry & Aikens, Philadelphia, $382.50; De Forest Sheet & Tin Plate Co., Niles, O., $322.50; Fitz Dana & Co., Boston, $338.75; Griscom-Spencer Co., New York, $323.75; R. C. Hoffman Co., Baltimore, $325; Merchant & Evans, Philadelphia, $326.25; Manhattan Supply Co., New York, $333.75; Richards & Co., Baltimore, $320; Vermilye & Power, New York, $337.50.

TUBE SHEETS.—Ten circular condenser tube sheets, 23⅞ inches in diameter, 9-16-inch thick (aggregate weight about 800 pounds).—W. T. Hungerford Brass & Copper Co., New York, $0.20 per pound; Taunton-New Bedford Copper Co., New Bedford, Mass., $0.20.

SHEET METAL.—5,700 pounds galvanized sheet steel as specified.—Berry & Aikens, Philadelphia, $0.033; Griscom-Spencer Co., New York, $0.0285; R. C. Hoffman Co., Baltimore, $0.0282; J. B. Kendall Co., Washington, $0.02844; Merchant & Evans, Philadelphia, $0.0287; Manhattan Supply Co., New York, $0.029; Midvale Steel Co., Philadelphia, $0.027; Vermilye & Power, New York, $0.029.

STEEL BILLETS.—Bethlehem Steel Co., South Bethlehem, $0.025; Carbon Steel Co., New York, $0.0169; Erie Forge Co., Erie, Pa., $0.026.

ZINC PLATES.—50,000 pounds rolled sheet zinc boiler plates.—Bruce & Cook, New York, $0.0679; Jas. Clendennin Co., Baltimore, $0.0674 and $0.1074; Central Metal & Supply Co., Baltimore, $0.0679; Fitz Dana & Co., Boston, $0.03; Herrick Co., Boston, $0.06795; Manhattan Supply Co., New York, $0.06789; E. Philips & Sons, South Hannover, Mass., $0.066; Richards & Co., Boston, $0.0667; Nathan Trotter & Co., Philadelphia, $0.0684.

FEED PUMPS.—Ten vertical simplex feed pumps, 4-inch steam cylinder, 2½-inch water cylinder, 4-inch stroke, composition water end—spare parts to be provided as specified.—Blake & Knowles Steam Pump Works, New York, $875; A. S. Cameron Steam Pump Works, New York, $1,300; M. T. Davidson Co., Brooklyn, $855.50 and $955.50; Warren Steam Pump Co., New York, $1,686.

ANTIMONY.—4,000 pounds regulus of antimony.—Jas. Clendennin Co., Baltimore, $0.0825; General Metals Selling Co., New York, $0.094; Jas. A. Miller, New York, $0.0998; Merchant & Evans, Philadelphia, $0.0987; Nassau Smelting & Refining Works, New York, $0.0867; Pope Metals Co., New York, $0.0925; Shoomaker & Busch, Philadelphia, $0.0974.

VALVES.—Standard gate valves.—Cuyler & Mouler, Baltimore, $248.20; Champan Valve Mfg. Co., Washington, $483; Fairbanks Co., Washington, $812; Jenkins Bros., New York, $597.86; National Supply Co., Oradell, N. J., $565.40; M., M. & M., New York, $480.10; Nelson Valve Co., Chestnut Hill, Philadelphia, $330.48.

SCREWS.—Machine screws as specified.—Montgomery & Co., New York, $1,242.07; Manhattan Supply Co., New York, $1,247.55; M., M. & M., New York, $1,009.05; Sanson & Rowland, Philadelphia, $1,129.69; John Wanermaker, New York, $1,184.88; Rawles-Cobb Co., Boston, $1,022.81.

MACHINISTS' SETS.—Twelve machinists' sets.—Gisholt Mfg. Co., New York, $15; Handlan-Buck Mfg. Co., St. Louis, Mo., $16; J. B. Kendall Co., Washington, $22.50; Montgomery & Co., New York, $14.95; Manhattan Supply Co., New York, $17; M., M. & M., New York, $21.53; Rawles-Cobb Co., Boston, $20.50.

PIPE SETS.—Six No. 2 pipe sets.—Gisholt Machinery Co., New York, $24.75; J. B. Kendall Co., Washington, $33; Montgomery & Co., New York, $21.45; M., M. & M., New York, $25.99; Rawles-Cobb Co., Boston, $23.95.

(In order to assist the post office in delivering letters to new concerns, it is suggested that the names of incorporators be written in the lower left hand part of every envelope addressed to such new companies.)

New Buyers:—

The following manufacturing companies have filed articles of incorporation:

The Western Stove Co., Charleston, W. Va.; H. P. Boone, L. A. Boone, Lee J. Martin and others; $15,000.

S. J. Gardner Foundry & Machine Co., New Albany, Ind.; $50,000; by S. J. Gardner, F. S. Sisloff and Margaret G. Gardner.

The Westman Motor Truck Co., Cleveland, $200,000; by George A. Weisman, L. A. Westman, C. E. Jennings, George A. Carl, William H. Westman.

The Beck Automatic Electric Safety & Signal Switch Co., St. Louis; $50,000; by Charles Beck, Arthur Beck, Morris Tucker; to deal in safety appliances.

United States Machine & Tool Export Co., Cincinnati; $10,000; by William M. Haass, R. W. Rogels, Fred Pagels Jr., Earl R. Passel, Spencer M. Jones.

The Fire Retainer Heating Co., Dayton, O.; stoves and furnaces; $5,000; by Theodore D. Friend, Thomas J. McCormick, Albert McCray, H. D. Rhinehart and E. N. Shoup.

The Smith & Johnson Mfg. Co., Cincinnati; machine shop and hardware; $15,000; by John A. Smith, Albert F. Johnson, William F. Adler, W. M. Beinhart and G. A. Ginter.

The Mitchell Garage & Sales Co., Ltd., London, Ont., capital $50,000; to manufacture automobiles, gasoline engines, etc. Provisional directors, Frederick George Mitchell, John C. Coote, and Wm. F. Masuret.

The American Railway Valve, Gear & Equipment Co., St. Louis, Mo.; $20,000; railway equipment; by Leland A. Wind, David L. Price, St. Louis, Mo.; and Irvine F. Watkins, Kansas City, Mo.

The Universal Electric Mfg. Co., Bradford, Pa.; $100,000; electric machinery; by Elisha B. Cutler, Charles E. Foster, George W. Foster, Charles W. Randall, and William Olmstead, all of Bradford, Pa.

The Western Heating & Supply Co., Ltd., Port Arthur, capital $40,000, to do a plumbing and heating business, provisional directors, Oswald J. Deegan, Clara L. Deegan, W. F. Langworthy and others.

New Construction:—

Contractor Clift Wise, of Springfield, O., was awarded the contract for the International Harvester Co.'s new central plant at Springfield, and will start work immediately.

The Philadelphia Iron Works, Eighteenth street and Pennsylvania avenue, Philadelphia, has nearly completed a number of improvements, including extensive additions to its boiler, machine and plate metal shops.

The Yale & Towne Co., of Stamford, Conn., will put up a $50,000 plant, equipped with machinery and power for manufacturing locks, at St. Catharines, Ont. The city has given the company a plot of ten acres, has agreed to supply water free for ten years and has promised exemption from taxes for five years.

The Dowsley Spring & Axle Co., Ltd., Chatham, Ont., Can., is erecting a brick and frame building, 46 x 135 feet, to be used as an addition to the spring manufacturing department. The company is also installing some new machinery and a Wheelock 100-horsepower engine.

The Trebert Gas Engine Co., Butler, Ind., manufacturer of auto and marine gas engines, transmissions, etc., advises that it is planning to erect a 50x140 structure in Terre Haute, Ind., to which city it intends to move on the completion of the proposed building. The plans at present call for brick or concrete construction with steel sash.

The Washington Iron Works, Seattle, has under construction a reinforced concrete foundry, 120 x 160 feet. The main span is 45 feet and will be served by a 12-ton traveling crane supplemented by a number of gib cranes and a trolley system. The structure will be provided with steel sash with wire ribbed glass. The roof is of saw-tooth construction.

The National Electric Lamp Co., Cleveland, has purchased 30 acres on Noble road near Euclid avenue, that city, and intends to erect a number of buildings on it this spring. The present plans call for six two-story buildings to be used as offices, laboratories, etc. Architect F. E. Wallis, New York City, is preparing the plans and was in Cleveland last week to make definite arrangements.

The Reading Iron Co. has awarded the contract for the structural steel to be used in the rebuilding of its Ninth street mill to the McClintic-Marshall Construction Co., Pottstown, and operations are expected to begin shortly. It is the purpose of the company to rebuild the entire plant. This, however, will be done by degrees, so that operations will be interfered with as little as possible. This mill was originally erected 46 years ago, and when the work of rebuilding is completed, it will be a modern structure. It is here that the greater portion of the material is prepared for the tube mill of the company.

Rowland Firth & Son, founders and machinists, Phillipsburg, N. J., advise that contracts will be let shortly after May 1 for the construction and equipment of a 10-ton open-hearth steel foundry. There will be three structures, 41 x 101 feet, 60 x 101 feet and 30 x 40 feet respectively, to be built adjacent to the present plant. The 10-ton open-hearth steel furnace will use fuel oil exclusively and will be designed and erected by the company's engineers. It is expected that the first cast will be made early this summer.

William M. Zimmerman, Dayton, O., advises that he is organizing the Zimmerman Boiler & Tank Works. A works site has been purchased at Irwin street and the Big Four railway tracks, that city, and building will be commenced on two structures, one 20 x 40 feet, and the other, 12 x 30 feet. A three-bay, steel structure, 90 x 180 feet, will be erected later. A boiler repairing business will be conducted and various sheet iron products, including tanks, heaters, stand-pipes, structural shapes, etc., will be manufactured. The immediate machinery needs have been provided for.

General Industrial:—

Contract has been awarded to the Allegheny County Light Co., Pittsburg, for the power to operate the

new plant of the Linde Air Products Co., being built at Trafford City, Pa. The latter will be ready for operation about July 1. Motors are being installed by the Westinghouse Electric & Mfg. Co.

Crown Die & Tool Co., Chicago, has increased its capital from $8,000 to $40,000.

Star Brass Works Co., Kansas City, Mo., has filed statement increasing its capital stock from $10,000 to $30,000.

Ludlow-Saylor Wire Co., St. Louis, has increased its capital stock from $500,000 to $600,000.

The Tips Foundry & Machine Co., Austin, Tex., has increased its capital stock from $20,000 to $40,000 and will make improvements to plant.

The Racine Malleable & Wrought Iron Co., of Racine, Wis., has purchased three additional lots adjoining the present holdings to provide room for future extensions and additions. Nothing definite has been decided upon.

The Gainesville Foundry & Machine Works, advises that its new plant will be ready for operation about the middle of May. In addition to locomotive and general machinery repairs, the company will manufacture phosphate and saw mill machinery.

A company consisting of Lyman Stewart, president of the Union Oil Co.; H. W. O. Melveny, W. M. Garland of Los Angeles, Cal.; W. W. Mills of Topeka, Kas.; F. Riffle of San Francisco and Arthur L. Adams and Warren H. Frost of Los Angeles has been organized to manufacture a gas producer which makes gas from crude oil.

The Sharon Iron & Metal Co., Sharon, Pa., is being organized to take over the property formerly occupied by the plant of the Damascus Brake Beam Co. A charter has been applied for by Harry B. McDowell, George H. Allen, Glenn Carley, Horace W. Davis and Morris Speer. The company proposes to deal in old material.

The Finished Arts Mfg. Co., Newark, N. J., which was recently incorporated, advises that it has been doing business as a partnership for two years. At present it has all the necessary equipment since the company took over a going concern. It expects, however, to increase the output, believing that it is in a position to handle the output of 2,000 pieces daily.

The Westinghouse Machine Co., of Pittsburg, recently received an order from the Weymouth Light & Power Co., for a 625-kilowatt, single-flow, high-pressure turbine, to be installed in the Light & Power company's power house at East Weymouth, Mass. The turbine will use steam at 150 pounds pressure, and will exhaust into a vacuum of 27 inches, maintained by a Leblanc jet type condenser.

The American Seeding Machine Co., Springfield, O., closed its foundry at the Superior division, April 17. It is now moving into its new foundry on Linden avenue, which will have about twice the capacity of the old plant. The new works on Linden avenue were formerly the old malleable foundry of the International Harvester Co., one of the best gray iron foundries in Springfield, being thoroughly modern in every respect.

Peter B. Nelson, president of the United Refrigerator & Ice Machine Co., Kenosha, Wis., formerly the Racine Refrigerator & Fixture Co., announces that the plant will remain at Kenosha, despite flattering offers from Rockford, Ill., and other cities. The company recently changed its name to the United Refrigerator & Ice Machine Co., increased its capital from $500,000 to $750,000 and will go into the manufacture of ice-making machinery on a large scale.

The Acme Electric Appliance Co., Ltd., Brantford, Can., whose incorporation was recently noted, advises that it will manufacture and sell the Thermal electric fire alarm, which reports and locates a fire automatically. In the near future, it intends to erect shops for manufacturing these instruments, but at present has not decided fully as to the construction. It is now arranging for an outside firm to manufacture the parts which it will assemble, thus placing it in a position to put the instrument on the market in the course of a few weeks.

The Milwaukee Refrigerator Transit Co., of Milwaukee, Wis., has purchased the interests of the Milwaukee Car Mfg. Co., Port Washington road and Gibson corners, north of Milwaukee. The plant consists of four one-story buildings, dry kilns, etc. The Refrigerator company has increased its capital stock from $150,000 to $400,000 for the purpose of covering the purchase. The officers are: President, Fred Pabst; vice president, Robert Nunnemacher; secretary and general manager, H. W. Marsh; treasurer, Oliver C. Fuller.

The Brookside Machine & Repair Co., Cleveland, which was recently incorporated, has completed its shop, which is of brick and located at the corner of Clark avenue S. W. and West Forty-first street. It expects to commence operating about May 1, and will shortly complete its formal organization. It proposes to build various high-grade gasoline and gas engines for motor boats, fittings for motor boats, etc. It purchased the machinery equipment of James Vokaty, at 3202 West Fifty-second street, who has been conducting a shop of this character for four years.

The Ideal Electric Co., manufacturer of electric automobiles, recently moved to its new plant at 308 East Huron street, Chicago. The new building is a two-story brick structure, which will be equipped with tools and power transmission machinery for the manufacture of electric vehicles. The capital stock of the company has been increased to $250,000. The officers of the company are: President, Bruce Borland; vice president, Uri B. Grannis; second vice president, Chauncey B. Borland; treasurer, Cyrus H. Adams Jr.; secretary, Mark S. Willing.

Charles F. Forster has sold his interest in the corporation of Forster, Waterbury & Co., and has resigned his position as treasurer and general manager. The foundry business heretofore carried on by Forster Waterbury & Co., will hereafter be conducted by the Franklin Park Foundry Co., which will continue the manufacture of malleable and gray iron castings, especially such as steam water and gas pipe fittings, link belt chain, etc. The main office will be located at Herrs Island, Pittsburg, and the factory office and works at Franklin Park, Chicago. The officers of the Franklin Park company are: President, James B. Walsh; secretary and treasurer, J. Twing Brooks; general manager, J. N. Korhumel.

Trade Notes:—

Additional office space has been secured in the Curry building, Pittsburg, by the Des Moines Bridge & Iron Co., and the general offices of the company will be removed from Des Moines, Ia., in the near future.

The Sullivan Machinery Co. has established a branch office at 35 Federal street, Boston, and has placed George E. Wolcott in charge of the Boston office. He was formerly manager of the New England sales at the Claremont, N. H., office.

Fires:—

The Tarrant Foundry Co., 323 West Illinois street, Chicago, sustained a loss of about $20,000 on April 21, the loss being covered by insurance.

The Excelsior Foundry Co., Bay City, Mich., sustained loss estimated at $7,500 on April 17, through a serious fire in its foundry, the loss being partially covered by insurance. The pattern shop and office were not damaged. The foundry will be rebuilt.

New Catalogs

ELECTRIC FANS.—The Sprague Electric Co., New York City, in a handsomely illustrated, 36-page catalog, describes its line of desk and bracket fans, exhaust fans, ceiling fan motors, etc.

DRUM CONTROLLERS.—Drum controllers are described in a 12-page bulletin, issued by the General Electric Co., Schenectady, N. Y., and supersedes the previous bulletin issued by this concern on this subject.

CHUCKS.—The Skinner Chuck Co., New Britain, Conn., has issued a 48-page price list of its extensive line of combination lathe, drill and planer chucks, as well as face plate jaws, drill press vises, reamer stands, etc.

BENDING TOOLS.—In a 16-page pamphlet, issued by D. A. Hinman & Co., Sandwich, Ill., hand bending tools of various types are illustrated and described. These include eye, angle, ring and hinge benders, etc. This concern also manufactures sheet metal shears.

BLACK AND GALVANIZED STAMPED WARE.—Buckets, tubs, cans, stove pipe and other ware stamped from black and galvanized sheets, are illustrated and described in a 70-page catalog, issued by the Wheeling Corrugating Co., Wheeling, W. Va.

ELEVATOR CONTROLLERS.—The Cutler-Hammer Mfg. Co., Milwaukee, is sending to the trade, corrections for its 128-page catalog, describing its extensive line of elevator controllers. These corrections are printed on gummed paper so that they may be readily pasted in this catalog.

FOUNDRY EQUIPMENT.—In a four-page circular, the Hanna Engineering Works, Chicago, briefly illustrates its line of foundry equipment, which consists of pneumatic tripod, frame post and swivel post sand shakers, revolving dumping riddle, etc. The latter is furnished mounted on wheels if desired.

WIRES AND CABLES.—A 76-page catalog, issued by the General Electric Co., Schenectady, N. Y., is devoted to the subject of wire and cables. This book should be of considerable service to purchasing agents, central station managers, and all who have occasion to buy or use wire and cable for any service.

FEEDER VOLTAGE REGULATORS.—The General Electric Co., Schenectady, N. Y., has issued a revised bulletin which supersedes previous bulletins on the subject of feeder voltage regulators. Regulators of induction and switch types, single and polyphase, hand-operated and automatically-operated, are described.

STEAM SPECIALTIES.—The Schutte & Koerting Co., Philadelphia, has recently issued bulletins on the following subjects: Vacuum breaker valves; blast governors for Corliss engines; grease extractor and feed water filter; automatic engine lubricator; air-jet chimney ventilators and free exhaust and back pressure valves.

CONTROLLERS.—The Cutler-Hammer Mfg. Co., Milwaukee, in a 64-page booklet, illustrates and describes the extensive line of elevator controllers developed by the J. L. Schureman Co., of Chicago, but now manufactured by the Cutler-Hammer Mfg. Co. A large number of accessories for both direct and alternating current controllers are also shown.

SHAPERS.—The extensive line of high duty shapers built by Gould & Eberhardt, Newark, N. J., is illustrated and described in a 48-page catalog, recently issued. Details of construction are included, as well as suggestions for erecting and installing high duty shapers. Interesting illustrations are also contained in this catalog, which show the use of the shaper as a manufacturing tool.

BOILERS.—The Heine Safety Boiler Co, devotes a 20-page booklet to descriptions and methods of operating Heine boilers and superheaters. In addition to a number of reproductions of the various repair parts, diagrams of both the boiler and superheater are included. In connection with the diagrams are two sets of rules to be observed in the operation of the boiler and superheater.

SMALL GENERATING SETS. — Bulletin No. 130, issued by the Crocker-Wheeler Co., Ampere, N. J., is devoted to small direct-current generating sets in sizes from 1.75 to 21 kilowatts. These sets are intended for small lighting systems and consist of Crocker-Wheeler generators driven by engines manufactured by the United States Rapid Fire Gun & Power Co., Derby, Conn.

SPRAY NOZZLES AND STRAINERS.—The Buffalo Forge Co., Buffalo, in a 16-page folder, illustrates its line of spray nozzles and strainers adapted for use at blast furnaces, for gas washing, condenser systems, cooling towers, etc. These nozzles can be used for any purpose for which a fine spray is essential, such as for moistening air under any condition or for settling dust and ashes.

ASPHALT FLOORS.—The American Asphaltum & Rubber Co., 600-614 Harvester building, Chicago, has issued a 20-page booklet, 6 x 9 inches, containing a description and photographs of its asphalt mastic floors. These floors have been installed in the St. Charles, Mo., plant of the American Car & Foundry Co., the new tractor building of the International Harvester Co., Chicago, and in other plants.

CONDUIT PRODUCTS.—In a 48-page catalog, issued by the Sprague Electric Co., New York City, its extensive line of conduit products is illustrated and described. Stamped steel boxes and covers are shown, as well as steel-armored flexible cord. A 16-page bulletin has also been issued by the Sprague Electric Co., which contains a partial list of installations of engine type generators made by this concern.

BLOWERS AND FANS.—The American Blower Co., Detroit, has recently issued a number of bulletins which illustrate and describe its various products, including cast iron volume blowers, steel pressure blowers, steel plate exhaust fans, cooling tower fans, disc ventilating fans and mine fans. A small booklet is devoted to Sirocco ventilating sets and vertical self-oiling engines are illustrated and described in a 52-page bulletin.

ELECTRICAL PRODUCTS. — The Fort Wayne Electric Works, Fort Wayne, Ind., has recently issued bulletins describing the following products: Single-phase, prepayment induction watt-hour meters; small motors; electric rock drills; sign and house lighting transformers and bell ringing transformers. A 26-page catalog has also been issued by this concern, in which is illustrated and described an extensive line of electric fans.

CENTRIFUGAL PUMPS. — Bulletin No. 1624, issued by the Allis-Chalmers Co., Milwaukee, describes a new line of standard, single stage centrifugal pumps. The bulletin contains 18 pages and describes the various standard types of pumps which are being manufactured. An interesting feature of these pumps is the provision which has been made to prevent back leakage from the discharge chamber into the suction chamber.

FROGS, SWITCHES AND CROSSINGS.—The L. A. Green Co., Park building, Pittsburg, in a 36-page catalog, recently issued, illustrates and describes its extensive line of frogs, switches, crossings, switch stands, rail braces, curves and other trackwork intended for railroads, mines, industrial track systems, etc. An interesting table of the number of gross tons per mile of rail weighing from 12 to 110 pounds per yard is included, as well as detail instructions for ordering material.

PNEUMATIC APPLIANCES.—The Curtis & Co. Mfg. Co., St. Louis, has recently issued a new catalog describing fully its line of pneumatic appliances. The first 13 pages are devoted to illustrations of various sizes and types of Curtis air compressors. The remainder of the catalog contains data regarding air hoists, foundry elevators, scrap-breaking machines, crane hoists, etc. The catalog also contains a description of the new Curtis closed hopper sand blast. The catalog is 9 x 6 inches, and contains 64 pages.

PRACTICAL HINTS.—In a 36-page booklet, issued by Gould & Eberhardt, Newark, N. J., practical hints and instructions for operating automatic gear-cutting machines and gear-cutter grinders, are given. This work can be used as a ready reference in operating these machines. The instructions are comprehensive and are expressed in simple terms. Illustrations of the comparative sizes of gear teeth are also included, as well as rules for bevel gears, helical or spiral gears, tables of circumferences of circles, etc.

ADJUSTABLE SHAFT BEARING.—In a 12-page bulletin issued by the Sauer Power Generating Co., Pittsburg, the adjustable shaft bearing made by this concern is illustrated and described. This bearing can be fitted to any size of hanger and pillow block and consists of a casing or shell suitably supported and a sleeve with several slots which fits loosely around the shaft. The bearing blocks are inserted in these slots and slide freely therein. All bearings are adjustable to shaft sizes, ¼ inch to ¾ inch either way from the standard size of bearing.

MOTOR DRIVE.—"Motor Drive for Metal Working Machinery" is the title of a 28-page catalog, issued by the General Electric Co., Schenectady, N. Y., which contains many illustrations and methods of properly and economically applying either alternating or direct-current motor drive to metal working machinery. The catalog shows the application of motors to sensitive drills and drill presses, metal-cutting saws, shapers, milling machines, slotters, engine lathes, turret lathes, vertical milling machines, boring mills, rotary planers, punches and shears, pipe machines, screw machines, wheel presses, etc.

MELTING FURNACE.—The Rockwell Furnace Co., 26 Cortlandt street, New York City, in bulletin No. 28, describes an oil or gas-fired furnace for melting aluminum, brass, bronze, copper, ferro-manganese, gray iron, semi-steel, etc. These furnaces are of the open-flame type and are lined with carborundum, ganister or fire tile. Low pressure blast is used. The time required for melting varies with the kind of metal melted, but eight heats of average brass mixtures can be melted per day in a 500-pound furnace and four heats in a 6,000-pound furnace. These furnaces are built in capacities up to 24,000 pounds.

BLACK AND GALVANIZED SHEETS.—A 24-page folder, issued by the Seneca Iron & Steel Co., Buffalo, is devoted to its extensive line of Bessemer and open-hearth, black and galvanized sheets. This concern also manufactures black, painted or galvanized corrugated sheets, 2-V and 3-V crimped roofing, pressed standing seam roofing, pressed brick siding, clapboard or weatherboard siding, plain roofing, roll and cap roofing, plain ridge roll, plain ridge capping, etc. A price list of the extensive line of sheet products manufactured by this concern is also included, as

well as United States standard weights of steel sheets, bundling tables of black and galvanized sheets, etc.

DIRECT-CURRENT GENERATORS.—Small direct-current generators, ranging in capacities from 1¼ to 20 kilowatts, are described in a bulletin issued by the General Electric Co., Schenectady, N. Y. These generators are suitable for small lighting plants where the average length of the feeder circuit is 400 yards or less, and the maximum length is not greater than three-quarters of a mile. The generators are provided with sliding bases which facilitate adjustment of the belt, and they can be installed on the floor, wall or ceiling. With the exception of the 1¼-kilowatt generators, all are provided with commutating poles, thus rendering a change in the position of the brushes with change of load unnecessary. The bulletin contains tables of ratings, weights and dimensions.

PUNCHES AND SHEARS.—In a 48-page catalog, issued by the Badger State Machine Co., Janesville, Wis., its extensive line of punches, shears, bending rolls and woodworking machinery is illustrated and described. This concern manufactures a line of double end punches and shears, combined power punches and shears, single end punches and shears, power splitting shears, alligator shears, combined punch and splitting shears, lever shears, lever punches, bench punches, etc. The bending rolls manufactured by this concern are adapted for the lighter class of work handled by boiler shops, such as stack and breeching work, small tank work, etc. In the line of woodworking tools the catalog illustrates a self-feed rip saw table, swing cut-off saw and a combination saw table.

MOTOR TRUCKS.—In a handsomely illustrated, 24-page catalog, the Seitz Automobile & Transmission Co., Detroit, illustrates and describes its line of motor trucks made in various capacities from 1,500 pounds to five tons. The 5-ton truck is particularly adapted for heavy hauling. The power plant consists of a 4-cycle, 4-cylinder motor with a 5½-inch bore and 6½-inch stroke. It will generate 55 to 60 horsepower at standard speed. The frame is made of structural steel, 1 15/16 x 6 inches, and is reinforced with steel castings at the corners. The wheel base is 130 inches and the weight of the truck is 7,000 pounds. The load space is 13 x 5½ feet and the overall length, 18 feet. The front wheels are equipped with single solid tires, 36 x 6 inches and on the rear wheels are dual solid tires, 40 x 4 inches.

CONVERTIBLE DUMP CARS.—The Ernst Wiener Co., 50 Church street, New York City, in a four-page bulletin, illustrates and describes the Shelton convertible dump car. This concern has recently acquired the right to build these cars for narrow gage service for sale in the United States and Canada. These cars are adapted for transporting sand, gravel, coal, etc., ordinarily carried in hopper bottom cars. The car is so constructed that whether it is used as an ordinary flat bottom car or as a hopper bottom, the dumping mechanism is always covered and does not interfere with the load in any way. The opening and closing is accomplished by means of a hand wheel and through geared wheels connected with the shaft. The car can be built either for center or side discharge, the doors being arranged parallel to the track so that they dump ether inside the track or to both sides of the track, while the body of the car can be arranged either as a gondola, box or stock car

BY-PRODUCT COKE OVENS.—The Collin by-product coke oven is described in a handsomely illustrated, 42-page catalog, issued by the Coal Distillation Co., New York City. An extensive list of installations in Europe is included. The advantages claimed for this type of coke oven over the beehive type are an increase of 10 to 20 per cent in the yield of coke; by-products are obtained to the value of from 50 cents to $2.50 per ton of coke; coals may be used that are either too low in volatile matter or make too soft a coke in beehive ovens and the surplus gas can be used for illuminating purposes. The Collin regenerative coke ovens contain two regenerators which are alternately heated. Ovens without regenerators are also built and the difference between the latter and the regenerative oven is that the waste heat of non-regenerative ovens yields a certain amount of surplus power from the incandescent products of combustion which come from the heating flues of the ovens, by passing them through steam boilers.

BOILERS.—In a 20-page bulletin, issued by the Erie City Iron Works, Erie, Pa., the line of vertical, water tube boilers built by this concern is illustrated and described. The arrangement of the drums of these boilers permits a large liberating surface and storage capacity, as well as forming solid water surface over the tubes, preventing losses by radiation. Circumferential seams of the drums are single-riveted and the longitudinal seams are double butt-strapped, triple-riveted. The drums are designed for a constant working pressure of 150 pounds, but can be built for higher pressures if desired. The lower drum is suspended on all the tubes and the weight carried by each tube in supporting the drum and its contained water is less than 50 pounds. Furthermore, the tubes are curved so that each one may, independently of the other, expand or contract. Another bulletin isued by the Erie City Iron Works contains a report of results of the quality of steam obtained from these vertical, water tube boilers.

GAS-DRIVEN LOCOMOTIVES.—In a 24-page bulletin the Milwaukee Locomotive Mfg. Co., Milwaukee, illustrates and describes its mining type of gas-driven locomotives adapted for use in mines, tunnels, industrial plants, brick and cement works, etc. These locomotives are equipped with four-cylinder engines, designed to operate on gasoline, alcohol, kerosene or distillate. The radiators are constructed of copper and brass with sufficient water capacity to keep the engine from over-heating when operating under full load. The fuel tanks are made of seamless drawn steel or copper and are equipped with safety valves which serve to prevent leakage. The locomotive is equipped with a specially designed muffler fitted with a fine mesh wire screen, so arranged that fire cannot escape to the atmosphere. For underground work these locomotives are equipped with galvanized steel chemical tanks, fitted with a series of parallel pipes which are immersed in a chemical solution. The exhaust gases emitted by the engine pass through the pipes, emerge to the chemical solution in small jets and are effectively extinguished.

PILE DRIVERS.—A steam-driven, railroad pile driver of the revolving type, self-propelling at the rate of about 6 miles per hour and capable of making three revolutions per minute, is illustrated and described in a 16-page catalog issued by the Browning Engineering Co., Cleveland. The truck on which the pile driver is mounted is of the standard gage, eight-wheel, M. C. B. type, 45 feet long, and the distance from center pin to leads is 30 feet. One axle of each truck is driven by a spur gear and a pinion which is pulled out of mesh, when coupled in a train for running over the road. On the pinion shafts are located bevel gears which mesh with bevel pinions on a horizontal traveling shaft, extending through from truck to truck. The auxiliary truck is of broad gage and carries the rotating structure, or pile driver proper, consisting of engines, boiler, leads, hammer, etc. This auxiliary truck travels back and forth on the lower truck, a distance of 17 feet 3 inches, by means of an endless cable attached to a drum at one end of the car, operated by a hand lever. Illustrations are also included of various types of wrecking cranes, revolving steam shovels and locomotive cranes.

THE LENTZ ENGINE.—In a 16-page bulletin, issued by the Erie City Iron Works, Erie, Pa., the Lentz reciprocating, superheat steam engine, is illustrated and described. The Erie City Iron Works has obtained the exclusive rights for the manufacture of this engine in the United States and has already sold units of an aggregate horsepower of over 15,000. The valves of this engine are of the double-seated poppet type and the valve spindles are ground to fit in long bushings, no packing being used in this construction. The valve is so designed that it can withstand any temperature or change of temperature without affecting its fit, and as there is no rubbing surface it gives equally effective service under a high degree of superheat or saturated steam. The valves are actuated by a cam working on a roller, these parts being case hardened. When the valve comes to a seat the cam is disengaged, but the roller and cam are always in contact until the valve has been seated. Along the side of the engine extends a horizontal lay shaft from which the valves are driven. The governor consists of an inertia weight, two pendulae and one small flat spring. When required, the engine is provided with a hand speed adjustment and the speed can be varied while in operation.

Asbestos Industry

Canada produces 82 per cent of the world's supply of asbestos. The companies operating asbestos quarries and factories in the dominion are capitalized at $24,290,000. In 1880 only 380 tons of asbestos were produced, valued at $24,700, whereas in 1909, the production amounted to 63,300 tons, valued at $2,300,000. In 1909, 3,000 men were employed in the asbestos industry, and received wages amounting to $1,350,000. These facts and much valuable technical information of practical value to the general public, are contained in a finely printed and well illustrated volume, of 316 pages, just issued by the mines branch of the department of mines, Ottawa. This valuable addition to the series of monographs being issued under the direction of Dr. Haanel, was written by Fritz Cirkel, M. E., and treats the subject of asbestos from every viewpoint: history, geology, peculiarities of Canadian occurrences, quarryin and milling, together with statistics, cost of extraction, its occurrence in foreign countries, and its practical application in the arts and manufactures. The report covers over 300 pages, contains 66 photo-engravings, 88 drawings, and two maps of the Quebec asbestos districts. It is one of the handsomest, practical, technical reports that has been issued by the domonion government.